215-B-2

2004-0152

2211 Congress St.

Generator Pad

UNUM

logged on Spreadsheet

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
DRC Copy

2004-0152
Application I. D. Number

7/21/2004
Application Date

Nick Najafinia, UNUM
Applicant

2211 Congress Street, Portland, ME 04122
Applicant's Mailing Address

UNUM Generator Pad
Project Name/Description

Consultant/Agent

2211 - 2211 Congress Street, Portland, Maine
Address of Proposed Site

Applicant Ph: (207) 575-5200 Agent Fax:
Applicant or Agent Daytime Telephone, Fax

231 B002
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply): ☐ New Building ☐ Building Addition ☐ Change Of Use ☐ Residential ☐ Office ☐ Retail ☐ Manufacturing ☐ Warehouse/Distribution ☐ Parking Lot ☑ Other (specify) Generator Pad

| 8,000 s.f. | | OP |
|---|---|---|
| Proposed Building square Feet or # of Units | Acreage of Site | Zoning |

**Check Review Required:**

| | | | |
|---|---|---|---|
| ☑ Site Plan (major/minor) | ☐ Subdivision # of lots ____ | ☐ PAD Review | ☐ 14-403 Streets Review |
| ☐ Flood Hazard | ☐ Shoreland | ☐ HistoricPreservation | ☐ DEP Local Certification |
| ☐ Zoning Conditional Use (ZBA/PB) | ☐ Zoning Variance | | ☐ Other ____ |

Fees Paid: Site Pla $400.00 Subdivision ____ Engineer Review ____ Date 7/22/2004

## DRC Approval Status:

Reviewer ____

☐ **Approved** ☐ **Approved w/Conditions** See Attached ☐ **Denied**

Approval Date ____ Approval Expiration ____ Extension to ____ ☐ Additional Sheets Attached

☐ Condition Compliance ____ signature ____ date ____

**Performance Guarantee** ☐ **Required*** ☐ **Not Required**

* No building permit may be issued until a performance guarantee has been submitted as indicated below

| | | | |
|---|---|---|---|
| ☐ Performance Guarantee Accepted | date | amount | expiration date |
| ☐ Inspection Fee Paid | date | amount | |
| ☐ Building Permit Issue | date | | |
| ☐ Performance Guarantee Reduced | date | remaining balance | signature |
| ☐ Temporary Certificate of Occupancy | date | ☐ Conditions (See Attached) | expiration date |
| ☐ Final Inspection | date | signature | |
| ☐ Certificate Of Occupancy | date | | |
| ☐ Performance Guarantee Released | date | signature | |
| ☐ Defect Guarantee Submitted | submitted date | amount | expiration date |
| ☐ Defect Guarantee Released | date | signature | |

# SECTION 1

# DEVELOPMENT DESCRIPTION

## 1.1 Introduction

Unum Provident is proposing the addition of an emergency generator pad at the Congress Street Campus in Portland, Maine. This facility may involve phased construction and staged improvements intended to increase the reliability of the electrical power supply for the Congress Street Campus. This application for a modification for the facility is intended to address the items attendant with the Site Location of Development and Natural Resource Regulations and Permits of the existing facility. In order to provide flexibility for the facility over time, this application seeks approval for the upper limit of potential site and infrastructure needs for the emergency facility. Initial construction may actually result in lesser impacts and infrastructure requirements.

The application seeks approval to construct a concrete pad with dimensions of 80 x 100 feet (8,000 square feet). No building is proposed at this location. The Emergency Generator Pad needs to be sited close to existing infrastructure near the mechanical feeds to H.O. #2.

The facility will be used for emergency generators in the event of power outages..

It is noted that the activity in the facility should not affect this permit noting:

- Any air emissions licensing will be permitted separately; and

- The applicant agrees to the stipulation to submit supplemental information prior to the installation of equipment which could be considered noise pursuant to the requirements of MeDEP Air Quality Regulations 06.096.

The proposed facility will be located in the portion of the campus bounded to the south by Congress Street, to the west by the campus entrance drive from Congress Street, to the north by an internal driveway, and to the east by the Unum Daycare and wetlands. This area is currently forested.

The area is characterized as an upland peninsula surrounded by wetlands. The proposed activity will result in the disturbance of approximately 0.75 acres of land for the concrete pad, drive, construction of stormwater management facilities, and related site work.

## 1.2 Existing Site Conditions

The Unum Provident Campus is a large facility which holds an existing Site Location of Development Permit. This modification focuses on the immediate area where the emergency generator pad facility would be constructed. The area as described in the introduction is about 2.80 acres with the "project area" (disturbed area) being about 0.75 acres.

Topography in the area is mild with the upland peninsula gently rising above the wetlands which surround three sides. Elevations in this area range from 86 to 74 with the elevations in the area of the proposed facility ranging from 86 to 76. The site conditions are depicted on Drawing C-1 of the plan set.

Drainage flows from the upland area to the adjacent wetlands and continues through the wetlands to an unnamed tributary of the Stroudwater River. The drainage is tributary to the Stroudwater River and the Fore River. These receiving waters are not listed as rivers most at risk from development, sensitive, threatened regions, or watershed.

Soils on the site are mapped on the USDA SCS Map as being Scantic silt loam. Figures 8, 9, and 10 appended to this section provide the Medium Intensity Soils, Sand and Gravel Aquifer, and Surficial Geology for the site. Bedrock is known to be relatively shallow in portions of the campus.

The site is not in a 100-year floodplain based upon the Flood Map appended to this section as Figure 7.

## 1.3 Natural Resources

As stated, the site of the proposed project is a peninsula surrounded by wetlands. The wetlands in the project area were flagged and identified by Jennifer West of Normandeau Associates on December 12, 2003. Approximately 450± square feet of wetlands at the ditch of the entrance to the site will be impacted by the proposed emergency facility.

## 1.4 Proposed Project

The proposed project is generally described in the introduction as a 80 by 100 foot emergency generator pad. Access to the site will be from the internal driveway just north of the proposed facility.

The proposed facility and infrastructure connection locations are shown on Drawings C-2, C-3, and C-4 of the accompanying site plan.

## 1.5 Critical Areas

The critical areas are the adjacent wetlands proposed to remain undisturbed by construction of the project.

## 1.6 Construction Schedule

The construction of the facility may commence in the Summer of 2004. The Erosion Control Plan prepared for this submission includes winter provisions, if necessary.

## 1.7 Figures, Plates and Drawings

Figures showing the proposed new school and site are appended to this section and include:

| Figure No. | Title |
|---|---|
| 1 | DeLorme Location Map |
| 2 | USGS Topographic Map |
| 3 | Property Tax Map |
| 4 | Zoning Map |
| 5 | Aerial Photograph |
| 7 | FEMA Flood Map |
| 8 | USDA SCS Soils Map |
| 9 | MGS Sand and Gravel Aquifer Map |
| 10 | MGS Surficial Geology Map |
| 11 | National Wetland Inventory Map |

Drawings provided in support of the application include:

| Drawing No. | Description |
|---|---|
| C-1 | Existing Conditions |
| C-2 | Site Layout Plan |
| C-3 | Grading, Drainage, and Erosion Control Plan |
| C-4 | Utility Plan |
| C-5 | Miscellaneous Site Details |
| C-6 | Miscellaneous Site Details |

# Abutters - Unum Energy Facility Project

| | |
|---|---|
| 216-A010001 | Mark C. Segerstrom<br>2001 Congress Street<br>Portland, ME 04102 |
| 216-A011001 | Henrietta M. Andren<br>1967 Congress Street<br>Portland, ME 04102 |
| 216-A003001 | Henry S. Tinkham<br>1955 Congress St.<br>Portland, ME 04102 |
| 216-A006001 | Portland Lodge #188<br>BPOE of USA<br>1945 Congress Street<br>Portland, ME 04102 |
| 229-A002001 | Onex Company<br>440 Forest Avenue<br>Portland, ME 04101 |
| 248-A005001 | Portland Water District<br>PO Box 3553<br>Portland, ME 04104 |
| 230-A003001 | Andrew D. & Judith C. Green<br>1714 Westbrook St.<br>Portland, ME 04102 |
| 238-B005001 | Maine Turnpike Authority<br>430 Riverside Street<br>Portland, ME 04103 |
| 248-A006001 | Bruce G. Day & Jacqueline D. Mancini<br>1630 Westbrook St.<br>Portland, ME 04102 |
| 231-A003001 | Maine Turnpike Authority<br>430 Riverside Street<br>Portland, ME 04103 |
| 231-B004001 | Maine Turnpike Authority<br>430 Riverside Street<br>Portland, ME 04103 |

| | |
|---|---|
| 231-A007001 | Maine Turnpike Authority<br>430 Riverside Street<br>Portland, ME 04103 |
| 215-B004001 | MN Properties LLC<br>600 Roundwood Drive<br>Scarborough, ME 04074 |
| 216-A013001 | Barbara A. Harrington<br>794 Main Road<br>Phippsburg, ME 04562 |
| 238-B004 | CBS Realty LLC<br>10 Andover Rd.<br>Portland, ME 04102 |

FORM C 02/02

# PUBLIC NOTICE:
# NOTICE OF INTENT TO FILE
# AND
# PUBLIC INFORMATIONAL MEETING

Please take notice that

UNUM Provident, Attn: Nick Najafinia, 2211 Congress Street, Portland, ME 04101, phone 207-575-5200

(*Name, Address and Phone of Applicant*)

is intending to file a Site Location of Development Act permit application with the Maine Department of Environmental Protection pursuant to the provisions of 38 M.R.S.A. § § 481 thru 490 on or about

September 20, 2004

(*anticipated filing date)*

The application is for the Construction of the Emergency Generator Pad project (Phase II) at UNUM's Congress Street facility. The project includes construction of an 80' by 100' concrete pad, associated stormwater system controls, utilities and a paved access drive for emergency power generators.

(description of the project)

at the following location:

UNUM Provident Campus at 2211 Congress Street, Portland, ME 04101 to the east of the main access drive.

(*project location*)

A request for a public hearing or a request that the Board of Environmental assume jurisdiction over this application must be received by the Department, in writing, no later than 20 days after the application is found by the Department to be complete and is accepted for processing. A public hearing may or may not be held at the discretion of the Commissioner or Board of Environmental Protection. Public comment on the application will be accepted throughout the processing of the application.

The application will be filed for public inspection at the Department of Environmental Protection's office in Portland during normal working hours. A copy of the application may also be seen at the municipal offices in Portland, Maine.

(*city*)

Written public comments may be sent to the Department of Environmental Protection, Bureau of Land and Water Quality, 17 State House Station, Augusta, Maine 04333-0017.

A public informational meeting for the Emergency Generator Pad project (Phase II) at UNUM's Congress Street facility will be held on September 17, 2004 from 5:00 p.m. to 6 p.m. at UNUM Provident Corporations office.

DeLUCA-HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 8
SOUTH PORTLAND, MAINE 04106
TEL. 207 775 1121
FAX 207 879 0896

- SITE PLANNING AND DESIGN
- ROADWAY DESIGN
- ENVIRONMENTAL ENGINEERING
- PERMITTING
- AIRPORT ENGINEERING
- CONSTRUCTION ADMINISTRATION
- TRAFFIC STUDIES AND MANAGEMENT

September 28, 2004

Mr. Alex Jaegerman
Planning Division Director
City of Portland
389 Congress Street
Portland, Maine 04101

**Subject:** **Unum Generator Pad Project**
**Performance Guarantee and Submission Requirements**

Dear Mr. Jaegerman:

As required by the Portland approval letter dated September 20, 2004 for the Unum Generator Pad Project, the following items are provided under cover of this letter:

- A CD containing an AutoCAD Release 2000 drawing of the project.
- Seven (7) copies of the final plans.
- A performance guarantee covering the site improvements, and a cost estimate of the improvements.
- An inspection fee payment check in the amount of $3,293.96 (2% of the guarantee amount).

Unum is interested in starting this project as soon as possible and would appreciate your assistance in expediting release of the building permit for the project.

We understand a preconstruction meeting with the Contractor, Development Review Coordinator, Public Works representative, and the Owner is required prior to the start of construction.

Please contact our office with any questions regarding this matter.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.

Dwight D. Anderson, P.E.
Senior Engineer

DDA/sq/JN2445.01/Jaegerman-9-28-04

Enclosures – stated

C: Nick Najafinia, UnumProvident
Sarah Hopkins, City of Portland

DeLUCA-HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 8
SOUTH PORTLAND, MAINE 04106
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DDA/sq/JN2445.01/Jaegerman-9-28-04

Enclosures – stated

C: Nick Najafinia, UnumProvident
Sarah Hopkins, City of Portland

**Planning and Development Department**
**SUBDIVISION/SITE DEVELOPMENT**

## COST ESTIMATE OF IMPROVEMENTS TO BE COVERED BY PERFORMANCE GUARANTEE

Date: 9/27/04

Name of Project: Emergency Generator Pad – Unum Campus

Address/Location: 2211 Congress Street

Developer: Unum Provident

Form of Performance Guarantee: Letter of Credit

Type of Development: Subdivision _____ Site Plan (Major/Minor) X

**TO BE FILLED OUT BY THE APPLICANT:**

| | PUBLIC | | | PRIVATE | | |
|---|---|---|---|---|---|---|
| Item | Quantity | Unit Cost | Subtotal | Quantity | Unit Cost | Subtotal |
| 1. STREET/SIDEWALK | | | | | | |
| Road/Parking Areas | | | | | | |
| Curbing | | | | | | |
| Sidewalks | | | | | | |
| Esplanades | | | | | | |
| Monuments | | | | | | |
| Street Lighting | | | | | | |
| Street Opening Repairs | 1 | $ 5,800.00 | $ 5,800 | | | |
| Other | | | | | $18,000.00 | $18,000.00 |
| 2. EARTH WORK | | | | | | |
| Cut | | | | 1 LS | $11,980.00 | $11,980.00 |
| Fill | | | | 1 LS | $11,980.00 | $11,980.00 |
| 3. SANITARY SEWER | | | | | | |
| Manholes | | | | | | |
| Piping | | | | | | |
| Connections | | | | | | |
| Main Line Piping | | | | | | |
| House Sewer Service Piping | | | | | | |
| Pump Stations | | | | | | |
| Other | | | | | | |
| 4. WATER MAINS | | | | | | |
| 5. STORM DRAINAGE | | | | | | |
| Manholes | | | | 1 LS | $ 4,500.00 | $ 4,500.00 |
| Catchbasins | | | | 1 LS | $18,266.00 | $18,266.00 |
| Piping | | | | 1 LS | $18,266.00 | $18,266.00 |
| Detention Basin | | | | | | |
| Stormwater Quality Units | | | | 1 LS | $18,266.00 | $18,266.00 |
| Other | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6. | SITE LIGHTING | | | | 1 LS | $ 2,900 | $ 2,900 |
| 7. | EROSION CONTROL | | | | | | |
| | Silt Fence | | | | 1 LS | $ 1,500 | $ 1,500 |
| | Check Dams | | | | | | |
| | Pipe Inlet/Outlet Protection | | | | | $ 1,500.00 | $ 1,500.00 |
| | Level Lip Spreader | | | | | | |
| | Slope Stabilization | | | | | | |
| | Geotextile | | | | 1 LS | $ 4,000.00 | $ 4,000.00 |
| | Hay Bale Barriers | | | | 1 LS | $ 1,000.00 | $ 1,000.00 |
| | Catch Basin Inlet Protection | | | | | | |
| 8. | RECREATION AND OPEN SPACE AMENITIES | | | | | | |
| 9. | LANDSCAPING (Attach breakdown of plant materials, quantities, and unit costs) | | | | 1 LS | $ 8,240.00 | $ 8,240.00 |
| 10. | MISCELLANEOUS | | | | | | |
| | Site Electrical | | | | 1 LS | $38,500.00 | $38,500.00 |
| | TOTAL: | | | $5,800 | | | $158,898 |
| | GRAND TOTAL: | | | | | | $164,698 |

**INSPECTION FEE (to be filled out by the City)**

| | | PUBLIC | PRIVATE | TOTAL |
|---|---|---|---|---|
| A: | 2.0% of totals: | | | |
| | or | | | |
| B: | Alternative Assessment: | | | |
| | Assessed by: | (name) | (name) | |

**PERFORMANCE GUARANTEE**
**with the City of Portland**

Developer's Tax Identification Number: 62-1598430

Developer's Name and Mailing Address: UnumProvident Corporation
Attn: Nick Najafinia, Facilities Management, **B146**
2211 Congress Street
Portland, ME 04122

City Account Number: [1] _____

Treasurer's Report of Receipts Number: [1] _____

Project Job Number: [1] 2004-0152
(from Site Plan Application form)

Application of UnumProvident Corporation for an emergency generator and associated pad a/k/a Project Job Number 2004-0152 as shown on the approved plan for 2211 Congress Street, Portland, Maine.

The City of Portland (hereinafter the "City") will hold the sum of $164,698 on behalf of UnumProvident Corporation in a non-interest bearing account established with the City. This account shall represent the estimated cost of installing the public improvement components of an emergency generator and associated pad a/k/a 2004-0152 at 2211 Congress Street, Portland, ME as depicted on the subdivision/site plan, approved on September 20, 2004 as required under Portland Code of Ordinances Chapter 14 §§499, 499.5, 525 and Chapter 25 §§46 through 65. It is intended to satisfy the Applicant's obligation, under Portland Code of Ordinances Chapter 14 §§501, 502 and 525, to post a performance guarantee for the above referenced development.

The City, through its Director of Planning and Development, in his sole discretion and following 30 days' advance written notice to the Director, Facilities Management at UnumProvident, may draw against this Escrow Account in the event that:

1. the Developer has failed to satisfactorily complete by September 20, 2006 the work on the public aspects of the improvements to install an emergency generator and associated pad a/k/a Project Job Number 2004-0152, approval dated September 20, 2004; or

2. N/A

3. the Developer has failed to post the ten percent (10%) Defect Guarantee required by Portland Code of Ordinances Chapter 14 §§501 and 525; or

4. the Developer has failed to notify the City for inspections in conjunction with the installation of improvements noted in paragraph one.

The Director of Planning and Development may draw on this guarantee, at his option, either thirty days prior to the expiration date contained herein, or s/he may draw against this escrow for a period not to exceed ninety (90) days after the expiration of this commitment; provided that the Applicant will give the City written notice, by certified mail (restricted delivery to Duane Kline, Director of Finance, City of Portland, 389 Congress Street, Room 110, Portland, Maine) of the

expiration of this escrow within sixty (60) days prior thereto. Otherwise, drafts may be submitted by the City of Portland no later than ninety (90) days following such notice, whenever given.

After all underground work has been completed and inspected to the satisfaction of the Department of Public Works and Planning, including but not limited to sanitary sewers, storm drains, catch basins, manholes, electrical conduits, and other required improvements constructed chiefly below grade, the City of Portland Director of Planning and Development or its Director of Finance as provided in Chapter 14 §501 of the Portland Code of Ordinances, may authorize the City to reduce the available amount of the escrowed money by a specified amount.

This Escrow will automatically expire upon the earlier of:

1. the written notification from Portland's Director of Planning and Development that said work associated with the installation of an emergency generator and associated pad a/k/a Project Job Number 2004-0152 as required by Portland Code of Ordinances Chapter 14 §§499, 499.5, 525 and Chapter 25 §46 through 65 has been completed in accordance with the City of Portland's specifications; or

2. the expiration date of September 20, 2006 or any automatically extended date as specified herein.

Seen and Agreed to:
**UNUMPROVIDENT CORPORATION**

By: _____
E. Michael Taylor
V.P., Enterprise Facilities Management,

Attach Letter of Approval and Estimated Cost of Improvements to this form.

---

**Distribution**

1. This information will be completed by Planning Staff.
2. The account number can be obtained by calling Paul Colpitts, ext. 8665.
3. The Agreement will be executed with one original and one copy.
4. The original and copy, each signed by the Developer, will be delivered to the Finance Office, together with a copy of the Report of Receipts form.
5. The Director of Finance will sign the copies, retain the original for their files and deliver the other signed copy to the Planning Office.

**Department of Planning & Development**
Lee D. Urban, Director

# CITY OF PORTLAND

**Division Directors**
Mark B. Adelson
Housing & Neighborhood Services

Alexander Q. Jaegerman, AICP
Planning

John N. Lufkin
Economic Development

September 20, 2004

Nick Najafinia
UNUM
2211 Congress Street
Portland ME 04122

RE: UNUM Generator Pad
CBL: 231-B-002

Dear Mr. Najafinia:

On September 14, 2004, the Portland Planning Authority approved your plan for an emergency generator and associated pad at 2211 Congress Street as shown on the approved plan. The approval was made with the following condition:

- that prior to installation of the generator, a landscape plan showing a vegetated buffer be submitted for City review and approval.

The approval is based on the submitted site plan. If you need to make any modifications to the approved site plan, you must submit a revised site plan for staff review and approval.

Please note the following provisions and requirements for all site plan approvals:

1. Where submission drawings are available in electronic form, the applicant shall submit any available electronic CADD.DXF files with seven (9) sets of the final plans.

2. A performance guarantee/defect guarantee covering the site improvements as well as an inspection fee payment of 2.0% of the guarantee amount and 9 final sets of plans must be submitted to and approved by the Planning Division and Public Works prior to the release of the building permit. If you need to make any modifications to the approved site plan, you must submit a revised site plan for staff review and approval.

3. The site plan approval will be deemed to have expired unless work in the development has commenced within one (1) year of the approval or within a time period agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the expiration date.

4. Prior to construction, a pre-construction meeting shall be held at the project site with the contractor, development review coordinator, Public Work's representative and owner to review the construction schedule and critical aspects of the site work. At that time, the site/building contractor shall provide three (3) copies of a detailed construction schedule to the attending City representatives. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.


389 Congress Street • Portland, Maine 04101 • (207) 874-8721 • FAX 756-8258 • TTY 874-8936

5. If work will occur within the public right-of-way such as utilities, curb, sidewalk and driveway construction, a street opening permit(s) is required for your site. Please contact Carol Merritt at 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)

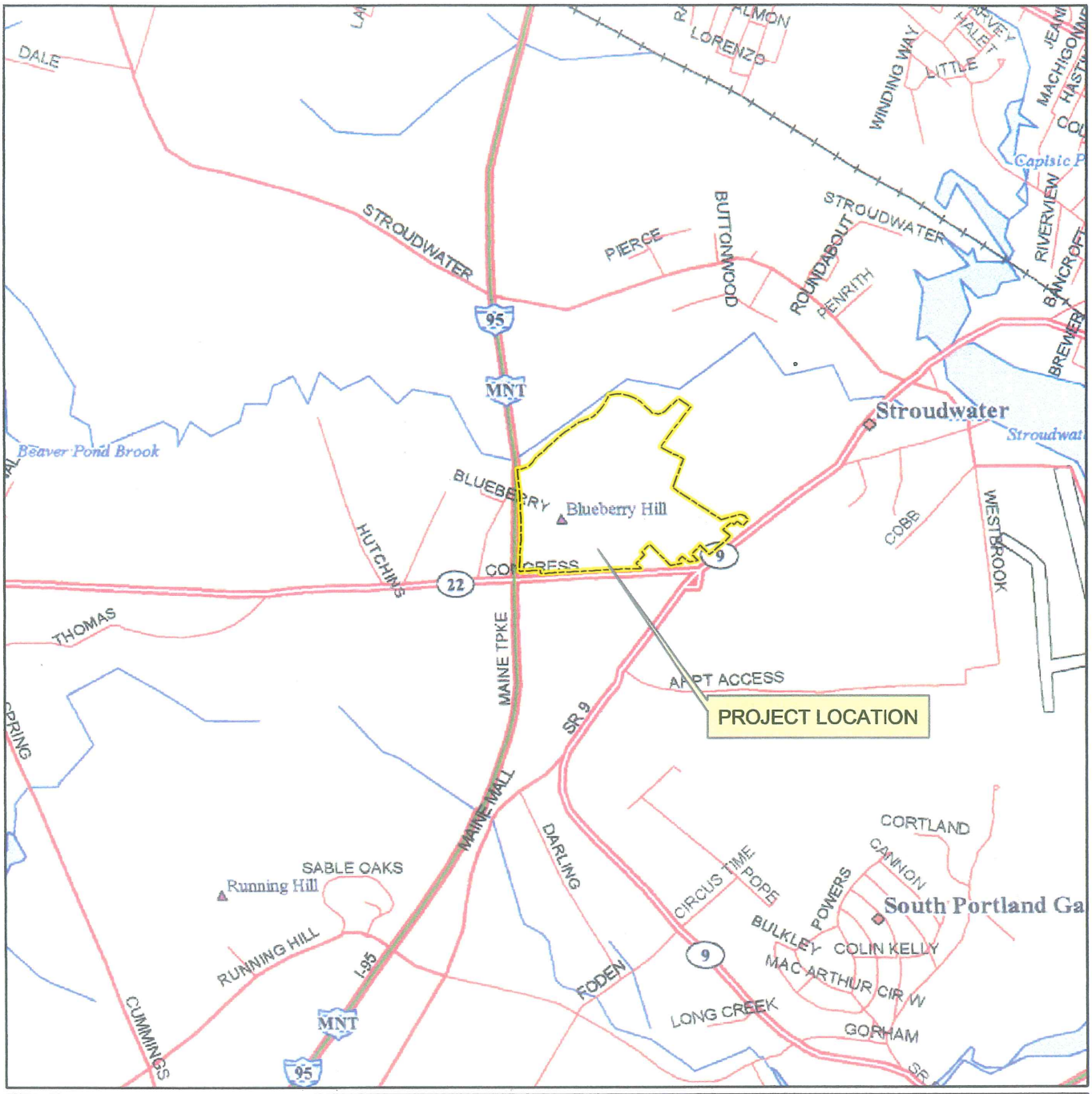
The Development Review Coordinator must be notified five (5) working days prior to date required for final site inspection. The Development Review Coordinator can be reached at the Planning Division at 874-8632. Please make allowances for completion of site plan requirements determined to be incomplete or defective during the inspection. This is essential as all site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact Sarah Hopkins, Development Review Services Manager at 874-8720.

Sincerely,

Alexander Jaegerman
Planning Division Director

cc: Lee D. Urban, Planning and Development Department Director
Sarah Hopkins, Development Review Services Manager
Jay Reynolds, Development Review Coordinator
Marge Schmuckal, Zoning Administrator
Gayle Guertin, Inspections
Michael Bobinsky, Public Works Director
Traffic Division
Eric Labelle, City Engineer
Jeff Tarling, City Arborist
Penny Littell, Associate Corporation Counsel
Lt. Gaylen McDougall, Fire Prevention
Assessor's Office
Approval Letter File




# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# DeLORME LOCATION MAP

SOURCE: DeLORME MAP EXPERT

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

| | |
|---|---|
| DRAWN: | RJK |
| CHECKED: | DDA |
| DATE: | FEB. 2004 |
| FILENAME: | G:\2445-UNUM\FIGURES\2445-DELORME-FIG1.mxd |
| SCALE: | 1 inch equals 2,000 feet |

FIGURE

1

# SECTION 14

# EROSION AND SEDIMENTATION CONTROL REPORT

## UNUM PROVIDENT: EMERGENCY GENERATOR PAD
## CONGRESS STREET – PORTLAND, MAINE

**Prepared for:**

**Unum Provident**
**2211 Congress Street**
**Portland, Maine 04101**

**Prepared by:**

**DeLuca-Hoffman Associates, Inc.**
**778 Main Street, Suite 8**
**South Portland, Maine 04106**

**July 2004**

## TABLE OF CONTENTS



**Attachments**

A – Seeding Plan
B – Sample EPA Certification and Inspection Forms

## 14.0 Introduction

DeLuca-Hoffman Associates, Inc. has been retained by Unum Provident to assist in the site design and site permitting of a proposed 8,000 square foot Emergency Generator Pad at the Unum Provident Congress Street campus in Portland, Maine.

Unum Provident is proposing the addition of an emergency generator pad at the Congress Street Campus in Portland, Maine. This application for a modification for the generator pad is intended to address the items attendant with the Site Location of Development and Natural Resource Regulations and Permits of the existing campus. In order to provide flexibility for the generator pad over time, this application seeks approval for the upper limit of potential site and infrastructure needs for the emergency generator pad. Initial construction may actually result in lesser impacts and infrastructure requirements.

The application seeks approval to construct an emergency generator pad with nominal dimensions of 80 by 100 feet (8,000 square feet). The Emergency Generator Pad needs to be sited close to existing infrastructure near the mechanical feeds to H.O. #2.

It is noted that the activity at the generator pad should not affect this permit noting:

- Any air emissions licensing will be permitted separately; and
- The applicant agrees to the stipulation to submit supplemental information prior to the installation of equipment which could be considered noise pursuant to the requirements of MeDEP Air Quality Regulations 06.096.

The proposed generator pad will be located in the portion of the campus bounded to the south by Congress Street, to the west by the campus entrance drive from Congress Street, to the north by an internal driveway, and to the east by the Unum Daycare and wetlands. This area is currently forested.

The area is characterized as an upland peninsula surrounded by wetlands. The proposed activity will result in the disturbance of approximately 0.75 acres of land for the concrete pad, drive, construction of stormwater management facilities, and related site work.

The proposed site contains wetland areas but no streams. The project proposes to fill approximately 450± square feet of the wetlands located at the ditch at the proposed entrance to the site.

This narrative contains the Erosion Control Plan designed and required for this project.

The project is not in a lake watershed or a watershed most at risk from development.

## 14.1 Existing Site Conditions

The Unum Provident Campus is a large facility which holds an existing Site Location of Development Permit. This modification focuses on the immediate area where the emergency generator pad would be constructed. The area as described in the introduction is about 2.80 acres with the "project area" (disturbed area) being about 0.75 acres.

Topography in the area is mild with the upland peninsula gently rising above the wetlands which surround three sides. Elevations in this area range from 86 to 74 with the elevations in the area of the proposed generator pad ranging from 86 to 76. The site conditions are depicted on Drawing C-1 of the plan set.

Drainage flows from the upland area to the adjacent wetlands and continues through the wetlands to an unnamed tributary of the Stroudwater River. The drainage is tributary to the Stroudwater River and the Fore River. These receiving waters are not listed as rivers most at risk from development, sensitive, threatened regions, or watershed.

Soils on the site are mapped on the USDA SCS Map as being Scantic silt loam. Figures 8, 9, and 10 appended to this section provide the Medium Intensity Soils, Sand and Gravel Aquifer, and Surficial Geology for the site. Bedrock is known to be relatively shallow in portions of the campus.

DeLuca-Hoffman Associates, Inc. is not aware of any areas of existing erosion on the site.

## 14.2 Overview of Soil Erosion and Sedimentation Concerns

The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. The "K" value is frequently used with the universal soil loss equation. The higher values are indicative of the more erodible soils. The project area consists of the following soils based upon the USDA Medium Intensity Soils Survey provided as Figure 8 in Section 1 of this application.

| Soil Type | Soil Description | K Value |
|---|---|---|
| Scantic | Silt Loam | 0.28 to 0.49 |

Based on a review of the "K" values, the onsite soils in the area where construction is focused are moderately susceptible to erosion after the cover material is stripped.

The primary emphasis of the Erosion and Sedimentation Control Plan to be implemented for this project is as follows:

1. Development of a careful construction sequence.
2. Rapid stabilization of denuded areas to minimize the period of soil exposure.
3. Rapid stabilization of steep slopes or concentrated drainage paths to avoid rill and gully erosion.
4. The use of on-site measures to capture initial sediment (hay bales/silt fence, etc.).
5. The provision for the use of Dirtbags for dewatering of areas likely to encounter groundwater.
6. Inclusion of special provisions for winter construction.
7. The implementation of long-term measures for erosion/sediment control and pollutant treatment through the construction of permanent water quality measures.

## 14.3 Description and Location of Limits of All Proposed Earth Movements

The proposed Emergency Generator Pad will involve the disturbance of about 0.75 acres of land. This land is currently forested and is most of an upland peninsula surrounded on three sides by wetlands. The proposed construction includes:

- Construction of a 8,000 square foot concrete pad;
- The construction of a below grade detention system;
- The construction of a driveway and gravel area for switch gear;
- The connection of support utilities; and
- The establishment of turf in areas disturbed for construction.

In general, the limit of disturbance is anticipated to closely mirror the project grading limits except for extensions to the utility connections.

Earthmoving activities will generally be to strip and grub the site, stockpile the loam for subsequent reuse, regrade and contour the land to support the proposed enclosed emergency generator pad and the installation of buried utilities to connect to existing utilities within the campus.

Upon completion of the project, stormwater from the concrete pad, parking, and rear gravel area will be intercepted and discharged to the water quality units and stormwater detention facility. Due to concerns on protecting this underground detention area from sedimentation during construction, this construction will not occur until late in the project. However, the site will be covered with subbase gravel for the construction period to reduce the period of exposure of the native erosion susceptible subgrade.

Earthwork is anticipated to involve well under 5,000 cubic yards.

## 14.4 Existing and Proposed Drainage Features

The existing drainage regime is principally sheet flow from the upland peninsula to the adjacent wetlands. The stormwater discharge has some natural attenuation in the wetland before discharging to a watercourse which leads to the Stroudwater River.

During construction, the flow is anticipated to remain sheet flow from the protective gravel surface. Upon completion of the project, most of the area affected by the project will be directed to water quality units and the underground stormwater system. An outlet control structure will control the release rate from the detention area across a riprap apron and into the wetland.

The proposed drainage system is being designed to have peak discharge rates from the project site below existing levels to avoid causing downstream erosion or flooding problems. The control of the peak runoff rates is discussed in more detail in the Stormwater Management Report provided as part of this application.

## 14.4A Critical Areas

The critical areas of the site include the wetlands around three sides of the proposed project.

## 14.5 Erosion/Sedimentation Control Devices

The Contractor as part of the site development will implement the following erosion and sediment control devices. These devices shall be installed as indicated on the plans or as described within this report. For further reference, see the *Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices*.

1. Siltation fence shall be installed downslope of any disturbed areas to trap runoff borne sediments until the site is revegetated. The silt fence shall be installed per the detail provided in the plan set and inspected immediately after each rainfall and at least daily during prolonged rainfall. Repairs shall be made immediately by the Contractor if there are any signs of erosion or sedimentation below the fence line. Proper placement of stakes and keying the bottom of the fabric into the ground is critical to the fence's effectiveness. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind the fence, the barrier shall be replaced with a stone check dam.

2. After the site has been cleared and grubbed, the subgrade will be rough graded with a protective layer of subbase gravel placed and compacted across the site. This subbase gravel should be a minimum of 6 inches in thickness. Deeper gravels with geotextile fabric should be placed in areas which will be used for access and staging.

3. Straw or hay mulch including hydroseeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed on slopes of less than 10 percent shall be anchored by applying water; mulch placed on slopes steeper than 10 percent shall be covered with a fabric netting and anchored with staples in accordance with the manufacturer's recommendations. Proposed drainage channels, which are to be revegetated, shall receive Curlex blankets by American Excelsior or equal. Mulch application rates are provided in Attachment A of this section. Hay mulch shall be available on site at all times in order to provide immediate temporary stabilization when necessary. Where necessary for concentrated runoff to be conveyed down a slope, a temporary stone channel or pipe sluice shall be used to convey runoff down the slope.

4. A water quality unit will be required to provide water quality enhancement for stormwater runoff from the parking and building areas after construction.

5. Riprap slopes, ditch linings, stone check dams, hay bale barriers, and culvert outlet aprons are intended to reduce runoff velocities and protect denuded soil surfaces from concentrated flows. Installation details and stone sizes are provided in the construction plan set on the erosion control detail sheets.

6. A construction entrance will be constructed at all access points onto the site to prevent tracking of soil onto the internal driveway system of the campus.

7. Stone sediment traps or a premanufactured SiltSack™ will be installed at catch basin inlets to prevent silt from entering the storm drain system. Installation details are provided in the plan set on the erosion control detail sheets.

8. Reinforced turf or riprap will be used on extremely steep slopes in areas designated on the drawings.

9. Dirtbags™ will be required to be on site and available for construction dewatering. The Contractor will be required to provide four Dirtbags™ with one prepared for operation prior to commencing any trenching operations.

10. Loam and seed is intended to serve as the primary permanent revegetative measure for all denuded areas not provided with other erosion control measures, such as riprap. Specific areas as shown on the landscape plan will receive sod. Application rates are provided in Attachment A of this section for temporary and permanent seeding.

11. Water will be the principal means to control fugitive dust.

## 14.6 Temporary Erosion/Sedimentation Control Measures

The following are planned as temporary erosion/sedimentation control measures during construction:

1. A crushed stone-stabilized construction entrance shall be placed for the construction access points from the campus drive.

2. Siltation fence shall be installed along the downgradient side of the proposed improvement areas prior to work in these areas. Additional siltation fence shall be installed at the toe of slope in cut areas as work progresses. The siltation fence will remain in place and properly maintained until the site is acceptably revegetated.

3. Dirtbags™ shall be installed in accordance with the details in the plan set. The Dirtbags'™ function on the project is to receive any water pumped from excavations during construction. A Dirtbag™ shall be installed any prepared for operation prior to any trenching on site. When Dirtbags™ are observed to be at 50% capacity, they shall be cleaned or replaced. Stone under the Dirtbag™ shall be removed and replaced concurrently.

4. Temporary stockpiles of stumps, grubbings, or common excavation will not be permitted to remain in the project area due to space limitations.

5. All denuded areas shall be rough graded and covered with at least 6 inches of compacted subbase gravel within 14 days of initial disturbance of soil.

6. All soils disturbed between November 1 and April 1 will be covered with mulch within 5 days of disturbance, prior to any predicted storm event of the equivalent of ½" of equivalent rainfall in a 24-hour period, or prior to any work shutdown lasting

more than 35 hours (including weekends and holidays). The mulch rate shall be double the normal rate.

7. For work which is conducted between November 1 and April 15 of any calendar year, all gravel work areas shall be covered with a 1-inch layer of crushed stone which is subsequently rolled and compacted. Denuded areas where loam has been placed for restoration shall be covered with hay mulch, applied at twice the normal application rate and (in areas over 10% grade) anchored with a fabric netting. The time period for applying mulch shall be limited to 5 days for all areas or immediately in advance of a predicted rainfall event.

8. The access drive shall be swept to control mud and dust as necessary. A street sweeper shall be available from the Contractor on immediate notice or request from the Owner, City or regulatory agency. A water truck shall be used to control dust both on the site and along points of ingress and egress.

9. During grubbing operations stone check dams or hay bale barriers shall be installed at any evident concentrated flow discharge points.

10. Silt fencing with a maximum stake spacing of 6 feet should be used, unless the fence is supported by wire fence reinforcement of minimum 14 gauge and with a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The bottom of the fence should be properly anchored a minimum of 6" per the plan detail and backfilled. Any silt fence identified by the owner or reviewing agencies, as not being properly installed during construction shall be immediately repaired in accordance with the installation details.

11. Storm drain catch basin inlet protection shall be provided through the use of stone sediment barriers or a premanufactured SiltSack™ as distributed by A. H. Harris Company, Portland, Maine. Stone sediment barrier installation details are provided in the plan set. The barriers or SiltSacks™ shall be inspected after each rainfall and repairs made as necessary, including the removal of sediment. Sediment shall be removed and the barrier or SiltSack™ restored to its original dimensions when the sediment has accumulated to ½ the design depth of the barrier. Sediment shall be removed from SiltSacks™ as necessary. Inlet protection shall be removed when the tributary drainage area has been stabilized.

12. All slopes over 4:1 shall receive erosion control mesh.

13. Slopes steeper than 3:1 shall receive reinforced turf unless rip rap or other non-vegetative stabilization measures are required by the contract.

14. Areas of visible erosion shall be stabilized with crushed stone. The Owner's representative in consultation with the engineer shall determine the size of the stone.

15. Catch basins shall all be installed with an opening 2'-6" below finish grade to receive a 4" underdrain with an end cap. A 3'-0" stub of underdrain surrounded by 6" of ¾" crushed stone and filter fabric shall be installed.

## 14.6A Standards for Stabilizing Sites for the Winter

1. Standard for the Timely Stabilization of Ditches and Channels: The contractor shall construct and stabilize all stone-lined ditches and channels on the site by November 15. The contractor shall construct and stabilize all grass-lined ditches and channels on the site by September 15. If the contractor fails to stabilize a ditch or channel to be grass-lined by September 15, then the contractor shall take one of the following actions to stabilize the ditch for late fall and winter.

   i. Install a sod lining in the ditch. The contractor shall line the ditch with properly installed sod by October 1. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, watering the sod to promote root growth into the disturbed soil, and anchoring the sod with jute or plastic mesh to prevent the sod strips from sloughing during flow conditions.

   ii. Install a stone lining in the ditch. The contractor shall line the ditch with stone riprap by November 15. The contractor shall hire a registered professional engineer to determine the stone size and lining thickness needed to withstand the anticipated flow velocities and flow depths within the ditch. If necessary, the contractor shall regrade the ditch prior to placing the stone lining so as to prevent the stone lining from reducing the ditch's cross-sectional area.

2. Standard for the timely stabilization of disturbed slopes: The contractor shall construct and stabilize stone-covered slopes by November 15. The contractor shall seed and mulch all slopes to be vegetated by September 15. The department will consider any area having a grade greater than 15% (10H: 1V) to be a slope. If the contractor fails to stabilize any slope to be vegetated by September 15, then the contractor shall take one of the following actions to stabilize the slope for late fall and winter.

   i. Stabilize the soil with temporary vegetation and erosion control mesh. By October 1 the contractor shall seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1000 square feet and apply erosion control mats over the mulched slope. The contractor shall monitor growth of the rye over the next 45 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed slope by November 15, then the contractor shall cover the slope with a layer of wood waste compost as described in item iii of this standard or with stone rip rap as described in item iv of this standard.

   ii. Stabilize the slope with sod. The contractor shall stabilize the disturbed slope with properly installed sod by October 1. Proper installation includes the contractor pinning the sod onto the slope with wire pins, rolling the sod to guarantee contract between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The contractor shall not use late-season sod installation to stabilize slopes having a grade greater than 33% (3H: 1V) or having groundwater seeps on the slope face.

iii. Stabilize the slope with wood waste compost. The contractor shall place a six-inch layer of wood waste compost on the slope by November 15. Prior to placing the wood waste compost, the contractor shall remove any snow accumulation on the disturbed slope. The contractor shall not use wood waste compost to stabilize slopes having grades greater than 50% (2H: 1V) or having groundwater seeps on the slope face.

iv. Stabilize the slope with stone rip rap. The contractor shall place a layer of stone riprap on the slope by November 15. The contractor shall hire a registered professional engineer to determine the stone size needed for stability and to design a filter layer for underneath the riprap.

3. Standard for the Timely Stabilization of Disturbed Soil: By September 15, the contractor shall seed and mulch all disturbed soils on areas having a slope less than 15%. If the contractor fails to stabilize these soils by this date, then the contractor shall take one of the following actions to stabilize the soil for late fall and winter.

   i. Stabilize the soil with temporary vegetation. By October 1, the contractor shall seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1000 square feet, and anchor the mulch with plastic netting. The contractor shall monitor the growth of the rye over the 45 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before November 15, then the contractor shall mulch the area for over-winter protection as described in item iii of this standard.

   ii. Stabilize the soil with sod. The contractor shall stabilize the disturbed soil with properly installed sod by October 1. Proper installation includes the contractor pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

   iii. Stabilize the soil with mulch. By November 15, the contractor shall mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1000 square feet on the area so that no soil is visible through the mulch. Prior to applying the mulch, the contractor shall remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the contractor shall anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

## 14.7 Sedimentation Sumps

The use of shallow sediment sumps within the work area to direct as much runoff to the area before discharge to the wetland is encouraged

## 14.8 Permanent Erosion Control Measures

The following permanent erosion control measures have been designed as part of the Erosion/Sedimentation Control Plan:

1. All storm drain pipes which are not connected to a formal inlet or outlet shall have riprap aprons at their outlet to protect the outlet and receiving channel from scour and deterioration. Installation details are provided in the plan set. The aprons shall be installed and stabilized prior to directing runoff to the tributary pipe or culvert. It is noted that all inlets and outlets over 18" in diameter are to have a flared concrete inlet and an aluminum bar rack. Pipes less than 18 inches in diameter are to have an HDPE flare. Riprap shall not be extended above the area shown on the plans.

2. All areas disturbed during construction, but not subject to other restoration (paving, riprap, etc.) will be loamed, limed, fertilized, mulched, and seeded. Fabric netting, anchored with staples, shall be placed over the mulch in areas where the finish grade slope is greater than 10 percent except in the areas with over 3:1 slopes where reinforced turf is required. Native topsoil shall be stockpiled and temporarily stabilized with seed and mulch and reused for final restoration when it is of sufficient quality. Where necessary, compost shall be added and blended to increase the organic content of the soil.

3. Catch basins shall be provided with sediment sumps for all outlet pipes that are 12" in diameter or greater.

4. Permanent water quality measures will be installed. This includes the water quality units to be constructed near the entrance to the underground detention area.

## 14.9 Timing and Sequence of Erosion/Sedimentation Control Measures

The following construction sequence shall be required to insure the effectiveness of the erosion and sedimentation control measures are optimized. These measures follow the separate requirements to be employed during the building demolition phase of the project.

Note: For all grading activities, the Contractor shall exercise extreme caution not to overexpose the site by limiting the disturbed area.

1. Install crushed stone-stabilized construction entrances from the driveway as shown on the Erosion and Sedimentation Control Drawing.
2. Install Silt Fence with the minimum amount of clearing necessary to access the area for installation.
3. Establish and prepare Dirtbag™ area across the street in a yard area near HO#2.
4. Install stone and hay bale check dams at any concentrated flow discharge points.
5. Clear and grub the project area.
6. Rough grade the subgrade and install a minimum 6-inch layer of subbase gravel over the denuded area.

7. Shape, loam and seed, mulch and mesh the perimeter areas.
8. Construct other site improvements and utilities except for the underground detention basin.
9. Raise catch basins to grade and install inlet protection devices.
10. Install pavement as detailed on the site plans.
11. Loam, lime, fertilize, seed and mulch all remaining disturbed and denuded areas except along the southerly side of the building.
12. Remove all accumulated sediment from silt barriers.
13. Install the underground detention basin and install the outlet control device.
14. Review stability of the site. If a 75% catch of grass is achieved, remove all other temporary erosion control devices.

Soil will be considered disturbed if it does not have an established stand of vegetation covering at least 75% of the soil surface or has not been mulched with hay applied at a rate of 230 lb./1000 sq. ft.

It is anticipated that site work may be suspended prior to winter. If so, the General Contractor shall schedule a meeting with the Owner, and Owner's representatives to review the site for conformance with the plan. This meeting shall be scheduled at least 10 days prior to winter shutdown. The Owner may elect to provide the Contractor with a punch list for measures to be complete before the interim shutdown. The Owner's punch list shall not obviate the Contractor's responsibility for compliance with the erosion control requirements of the project or permits.

## 14.10 Contracting Procedure

A General Contractor under contract to the Owner will construct the project. It is possible a design build firm could be engaged. The Contractor shall submit a schedule for the completion of the work which will satisfy the following criteria:

1. The above construction sequence should generally be completed in the specified order; however, several separate items may be constructed simultaneously. Work must also be scheduled or phased to prevent the extent of the exposed areas as specified below. The intent of this sequence is to provide for erosion control and to have structural measures such as silt fence, the protective gravel layer, and construction entrances in place before large areas of land are denuded.
2. The work shall be conducted in sections which will comply with this narrative.

The Contractor must install any added measures, which may be necessary to control erosion/sedimentation from the site and fugitive dust emissions dependent upon the actual site and weather conditions.

The Contractor shall note that no area within 50 feet of a slope with a vertical drop of more than 3' in 50 feet shall remain denuded for a period of over 5 days before it is temporarily stabilized. Temporary stabilization shall be the installation of mulching. All

other areas shall be stabilized within 14 days. For construction between November 1 and April 15 of any calendar year, all areas shall be temporarily stabilized at the earlier time frames specified above.

## 14.11 Provisions for Maintenance of the Erosion/Sedimentation Control Features

The Owner will contract the project. The project is subject to the requirement of a MeDEP Site Location of Development Permit and permits from the City of Portland. The Owner will require the Contractor to prepare a list and designate by name, address and telephone number all individuals who will be responsible for implementation, inspection and maintenance of all erosion control measures identified within this section and as contained in this Erosion and Sedimentation Control Plan. Specific responsibilities of the inspector(s) will include:

1. Execution of the Contractor/Subcontractor Certification contained in Attachment C by any and all parties responsible for erosion control measures on the site.

2. Assuring and certifying the construction sequence is in conformance with the specified schedule of this section. A weekly certification stating compliance, any deviations, and corrective measures necessary to comply with the erosion control requirements of this section shall be prepared and signed by the inspector(s).

3. In addition to the weekly certifications, the inspector(s) shall maintain written reports recording construction activities on site which include:
   - Dates when major grading activities occur in a particular areas.
   - Dates when major construction activities cease in a particular area, either temporarily or permanently.
   - Dates when an area is stabilized.

4. Inspection of this project work site on a weekly basis and after each significant rainfall event (0.5 inches or more within any consecutive 24 hour period) during construction until permanent erosion control measures have been properly installed and the site has been stabilized. Inspection of the project work site shall include:
   - Identification of proper erosion control measure installation in accordance with the erosion control detail sheet or as specified in this section.
   - Determine whether each erosion control measure is properly operating. If not, identify damage to the control device and determine remedial measures.
   - Identify areas that appear vulnerable to erosion and determine additional erosion control measures that should be used to improve conditions.
   - Inspect areas of recent seeding to determine percent catch of grass. A minimum catch of 75 percent is required prior to removal of erosion control measures.
   - Record date of installation of sorbent bags in catch basins, the dates of paving, the date of removal, and the disposal method and location.

Accumulated silt/sediment should be removed when the depth of sediment reaches 50 percent of the barrier height. Accumulated silt/sediment should be removed from behind silt fencing when the depth of the sediment reaches 6 inches.

5. If inspection of the site indicates a change should be made to the erosion control plan, either to improve effectiveness or correct a site-specific deficiency, the inspector shall immediately implement the corrective measure and notify the owner of the change.

Once construction has been completed, long term maintenance of the detention pond and catch basins will be the responsibility of the applicant. The catch basin sumps shall be inspected in April and October of each year. Sediment shall be removed when the depth of sediment reaches one half the depth of the sump.

All certifications, inspection forms and written reports prepared by the inspector(s) shall be filed with the Owner. All written certifications, inspection forms, and written reports must be filed within one (1) week of the inspection date.

## 14.12 Preconstruction Conference

Prior to any construction at the site, representatives of the Contractor, and the site design engineer shall arrange for and meet with the Owner to discuss the scheduling of the site construction. On or before that meeting, the Contractor will prepare a detailed schedule and a marked-up site plan indicating areas and components of the work and key dates showing date of disturbance and completion of the work. Three copies of the schedule and marked-up site plan shall be provided to the Owner.

## 14.13 Attachments

Attachment A – Seeding Plan
Attachment B – Sample EPA Certification and Inspection Forms

## 14.14 Plan References

DeLuca-Hoffman Associates, Inc. Drawings C-1 to C-6 for the 2004 Emergency Generator Pad

# ATTACHMENT A

# SEEDING PLAN

## SEEDING PLAN LAWN AND OTHER AREAS

Project UNUM Emergency Generator Pad

Site Location Congress Street, Portland

X Permanent Seeding _____ Temporary Seeding

1. Area to be seeded: <1 acres, OR _____ M Sq. Ft.
2. Instructions on preparation of soil: Prepare a good seed bed for planting method used.
3. Apply lime as follows: _____ #/acres, OR 138#/M Sq. Ft.
4. Fertilize with _____ pounds of - - N-P-K/ac. OR
   18.4 pounds of 10 - 20 - 20 N-P-K/M Sq. Ft.
5. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
6. Seed with the following mixture:

   45% Kentucky Bluegrass
   45% Creeping Red Fescue
   10% Perennial Ryegrass

When using small grain as nurse crop seed it at one-half the normal seeding rate.

7. Mulching instructions: Apply at the rate of _____ tons per acre. OR
   230 pounds per M. Sq. Ft.

| | Amount | Unit #, Tons, Etc. |
|---|---|---|
| 8. TOTAL LIME | 138 | #/1000 sq. ft. |
| 9. TOTAL FERTILIZER | 13.8 | #/1000 sq. ft. |
| 10. TOTAL SEED | 6 to 8 | #/1000 sq. ft. |
| 11. TOTAL MULCH | 230 | #/1000 sq. ft. |
| 12. TOTAL other materials, seeds, etc | Compost is likely required | |

13. REMARKS

- Recommended seeding dates after August 15.
- For areas with slopes >10%, waterways, areas within 100 feet of the stream, and fall and winter erosion control areas, mulch netting shall be used per manufacturer's specifications.
- Fertilizer requirements shall be subject to actual test results of the topsoil used for the project. The Contractor shall be responsible for providing topsoil test results for pH and recommended fertilizer application rates to the owner
- All loam shall have compost or peat admixtures to raise the organic content to 8%.

# TEMPORARY SEEDING PLAN

Project UNUM Emergency Generator Pad

Site Location 2211 Congress Street, Portland

_____ Permanent Seeding X Temporary Seeding

1. Area to be seeded: varies acres, OR _____ M Sq. Ft.
2. Instructions on preparation of soil: Prepare a good seed bed for planting method used.
3. Apply lime as follows: _____ #/acres, OR 138#/M Sq. Ft.
4. Fertilize with _____ pounds of - - N-P-K/ac. OR
   18.4 pounds of 10 - 20 - 20 N-P-K/M Sq. Ft.
5. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
6. Seed with the following mixture:

   50% Perennial Ryegrass
   50% Winter Rye

When using small grain as nurse crop seed it at one-half the normal seeding rate.

7. Mulching instructions: Apply at the rate of _____ tons per acre. OR
   180 pounds per M. Sq. Ft.

| | Amount | Unit # | Tons, Etc. |
|---|---|---|---|
| 8. | TOTAL LIME | 138 | #/1000 sq. ft. |
| 9. | TOTAL FERTILIZER | 18.4 | #/1000 sq. ft. |
| 10. | TOTAL SEED | 6 | #/1000 sq. ft. |
| 11. | TOTAL MULCH | 180 | #/1000 sq. ft. |
| 12. | TOTAL other materials, seeds, etc. | | |

13. REMARKS

The above seed mix is required in all temporarily disturbed wetland areas.

Fertilizer requirements shall be subject to actual test results of the topsoil used for the project. The Contractor shall be responsible for providing topsoil test results for pH and recommended fertilizer application rates to the owner.

# ATTACHMENT B

# SAMPLE EPA CERTIFICATION AND INSPECTION FORMS

# STORMWATER POLLUTION PREVENTION PLAN

## CONTRACTOR/SUBCONTRACTOR CERTIFICATION

PROJECT INFORMATION

Project Name: UNUM Emergency Generator Pad

Address: Congress Street

Portland, Maine 04101

CONTRACTOR/SUBCONTRACTOR INFORMATION

Firm Name:

Address:

Telephone:

Type of Firm:

CERTIFICATION STATEMENT

"I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the stormwater discharges associated with industrial activity from the construction site identified as part of this certification."

_____

Signature

_____

Typed Name

_____

Title

_____

Date

# STORMWATER POLLUTION PREVENTION PLAN

## INSPECTION REPORT

PROJECT INFORMATION

Project Name: UNUM Emergency Generator Pad

Address: Congress Street

Portland, Maine 04101

INSPECTOR INFORMATION

Inspector Name: _____

Firm: _____

Title: _____

Qualifications: _____

INSPECTION SUMMARY

Date of Inspection: _____

Major Observations: _____

_____

_____

_____

THE GENERATOR PAD IS IN COMPLIANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN WITH THE FOLLOWING EXCEPTIONS:

_____

_____

_____

_____

ACTIONS NECESSARY TO BRING THE PAD INTO COMPLIANCE:

_____

_____

REQUIRED MODIFICATIONS TO STORMWATER POLLUTION PREVENTION PLAN (MUST BE IMPLEMENTED WITHIN 7 DAYS OF INSPECTION):

_____

_____

_____

_____

CERTIFICATION STATEMENT:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the systems, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of find and imprisonment for knowing violations."

_____
Signature

_____
Typed Name

_____
Title

_____
Date

## LIST OF ATTACHMENTS

| | | |
|---|---|---|
| Section 1 | Development Description | ❖ |
| Section 2 | Title, Right Or Interest | ○ |
| Section 3 | Financial Capacity | ○ |
| Section 4 | Technical Ability | ○ |
| Section 5 | Noise | ○ |
| Section 6 | Visual Quality And Scenic Character | ○ |
| Section 7 | Wildlife And Fisheries | ○ |
| Section 8 | Historic Sites | ○ |
| Section 9 | Unusual Natural Areas | ○ |
| Section 10 | Buffers | ○ |
| Section 11 | Soils | ○ |
| Section 12 | Stormwater Management | ❖ |
| Section 13 | Maintenance Of Common Facilities Or Property | ○ |
| Section 14 | Erosion And Sedimentation Control | ❖ |
| Section 15 | Groundwater | ○ |
| Section 16 | Water Supply | ○ |
| Section 17 | Wastewater Disposal | ○ |
| Section 18 | Solid Waste | ○ |
| Section 19 | Flooding | ○ |
| Section 20 | Blasting | ○ |
| Section 21 | Air Emissions | ○ |
| Section 22 | Odors | ○ |
| Section 23 | Water Vapor | ○ |
| Section 24 | Sunlight | ○ |
| Section 25 | Notices | ○ |

❖ These MeDEP Sections were reviewed and a complete narrative follows this page.

○ These MeDEP Sections were reviewed under the original Site Location of Development Permit and further review is not warranted.

# ATTACHMENT C

## Water Quality Calculations

**DeLUCA-HOFFMAN ASSOCIATES, INC.**
**Consulting Engineers**
778 Main Street Suite 8
SOUTH PORTLAND, MAINE 04106
**(207) 775-1121**
**FAX (207) 879-0896**

JOB UNUM

SHEET NO. _____ OF _____

CALCULATED BY D Anderson DATE 7/21/04

CHECKED BY _____ DATE _____

SCALE _____

## Water Quality Calcs.

16,826 Treated to 60% TSS 91% x 60 = 55%

1,629 Untreated - 0%

# ATTACHMENT D

## Ditch Scour/Rip Rap Sizing Calculations

# ATTACHMENT E

## Miscellaneous Supporting Documentation

## APPENDIX D-13: Runoff Curve Numbers for use in TR-55 and TR-20

| Land Use/Cover type and hydrologic condition | Hydrologic Soil Group A | B | C | D |
|---|---|---|---|---|
| Cultivated Land | | | | |
| without conservation | 72 | 81 | 88 | 91 |
| with conservation | 62 | 71 | 78 | 81 |
| Pasture land | | | | |
| poor condition: heavily grazed, no mulch | 68 | 79 | 86 | 89 |
| fair condition: 50 to 75% ground cover | 49 | 69 | 79 | 84 |
| good condition: lightly grazed, > 75% ground cover | 39 | 61 | 74 | 80 |
| Meadow (protected from grazing) | 30 | 58 | 71 | 78 |
| Wood or forest land | | | | |
| Thin stand - poor cover, no mulch, burned over | 45 | 66 | 77 | 83 |
| Good stand - good cover, litter and brush cover soil | 25 | 55 | 70 | 77 |
| Wood yard (log storage) | 72 | 82 | 87 | 89 |
| Open space, lawns, parks, golf courses, cemeteries, etc. | | | | |
| Good condition: grass cover on 75% or more of the area | 39 | 61 | 74 | 80 |
| Fair condition: grass cover on 50 to 75 % of the area | 49 | 69 | 79 | 84 |
| Commercial and business areas (85% impervious) | 89 | 92 | 94 | 95 |
| Industrial districts (72% impervious) | 81 | 88 | 91 | 93 |
| Residential: Development completed, vegetation established, house and driveway drains toward road | | | | |
| Average lot size / Average % impervious | | | | |
| 1/8 acre or less (town houses) 65 | 77 | 85 | 90 | 92 |
| 1/4 acre 38 | 61 | 75 | 83 | 87 |
| 1/3 acre 30 | 57 | 72 | 81 | 86 |
| 1/2 acre 25 | 54 | 70 | 80 | 85 |
| 1 acre 20 | 51 | 68 | 79 | 84 |
| 2 acre 15 | 46 | 65 | 77 | 82 |
| Paved parking lots, roofs, driveways, etc.(excluding R-O-W) | 98 | 98 | 98 | 98 |
| Streets and roads | | | | |
| Paved with curb and storm sewers (excluding R-O-W) | 98 | 98 | 98 | 98 |
| Paved with ditches (including R-O-W) | 83 | 89 | 92 | 93 |
| Gravel (including R-O-W) | 76 | 85 | 89 | 91 |
| Dirt (including R-O-W) | 72 | 82 | 87 | 89 |
| Newly graded area (denuded) | 77 | 86 | 91 | 94 |

Note: Average runoff condition and $I_a = 0.2S$
Source: SCS, 1986 and DEP staff.

# APPENDIX D-1: One Day Precipitation Values (SCS)

**Table 3-4 24 Hour Duration Rainfalls For Various Return Periods. Natural Resources Conservation Service County Rainfall Data**

| County | Storm Type | Return Interval or Frequency 1-Yr | 2-Yr | 5-Yr | 10-Yr | 25-Yr | 100-Yr | 500-Yr | Annual | |
|---|---|---|---|---|---|---|---|---|---|---|
| Androscoggin | | 2.5 | 3.0 | 3.9 | 4.6 | 5.4 | 6.5 | 7.8 | 45.3 | |
| Aroostook C | | 2.1 | 2.1 | 3.2 | 3.6 | 4.2 | 5.0 | 5.9 | 36.1 | (Presque Isle Area) |
| Aroostook N | | 2.0 | 2.3 | 3.0 | 3.5 | 4.0 | 4.8 | 5.7 | 36.1 | (Fort Kent Area) |
| Aroostook S | *S* | 2.2 | 2.5 | 3.3 | 3.8 | 4.4 | 5.3 | 6.4 | 39.0 | (Houlton Area) |
| Cumberland NW | *E* | 2.8 | 3.3 | 4.3 | 5.0 | 5.8 | 6.9 | 8.3 | 43.4 | (NW of St. Route 11) |
| Cumberland SE | *E* | 2.5 | 3.0 | 4.0 | 4.7 | 5.5 | 6.7 | 8.1 | 44.4 | (SE of St. Route 11) |
| Franklin | | 2.4 | 2.9 | 3.7 | 4.2 | 4.9 | 5.9 | 7.0 | 45.6 | |
| Hancock | | 2.4 | 2.7 | 3.6 | 4.2 | 4.9 | 6.0 | 7.2 | 45.2 | |
| Kennebec | *N* | 2.4 | 3.0 | 3.8 | 4.4 | 5.1 | 6.1 | 7.2 | 41.7 | |
| Knox-Lincoln | *O* | 2.5 | 2.9 | 3.8 | 4.4 | 5.1 | 6.2 | 7.4 | 46.1 | |
| Oxford E | *T* | 2.5 | 3.0 | 4.0 | 4.6 | 5.3 | 6.4 | 7.6 | 43.0 | (E of St. Route 26) |
| Oxford W | *E* | 3.0 | 3.5 | 4.5 | 5.2 | 6.0 | 7.1 | 8.4 | 43.8 | (W of St. Route 26) |
| Penobscot N | *S* | 2.2 | 2.5 | 3.3 | 3.8 | 4.4 | 5.4 | 6.4 | 41.5 | (N of Can.-Atl. Rwy) |
| Penobscot S | | 2.4 | 2.7 | 3.5 | 4.1 | 4.8 | 5.8 | 6.9 | 39.5 | (S of Can.-Atl. Rwy) |
| Piscataquis N | *1* | 2.2 | 2.5 | 3.3 | 3.8 | 4.4 | 5.3 | 6.3 | 38.5 | (N of Can.-Atl. Rwy) |
| Piscataquis S | | 2.3 | 2.6 | 3.4 | 4.0 | 4.6 | 5.5 | 6.6 | 41.0 | (S of Can.-Atl Rwy) |
| Sagadahoc | *A* | 2.5 | 3.0 | 3.9 | 4.6 | 5.4 | 6.5 | 7.8 | 45.3 | |
| Somerset N | *N* | 2.2 | 2.5 | 3.3 | 3.8 | 4.4 | 5.3 | 6.3 | 37.3 | (N of Can.-Atl. Rwy) |
| Somerset S | *D* | 2.4 | 2.7 | 3.5 | 4.1 | 4.7 | 5.7 | 6.8 | 39.5 | (S of Can.-Atl. Rwy) |
| Waldo | | 2.5 | 2.8 | 3.7 | 4.3 | 4.9 | 6.0 | 7.1 | 47.2 | |
| Washington | *2* | 2.4 | 2.5 | 3.4 | 4.0 | 4.8 | 5.9 | 7.1 | 44.2 | |
| York | | 2.5 | 3.0 | 4.0 | 4.6 | 5.4 | 6.6 | 7.8 | 46.7 | |

NOTES: REVISED 4/10/92 Lew P. Crosby

24-HR. DURATION RAINFALL

SOURCES: 24-HR. DATA — TP 40

ANNUAL DATA — CDAN

**Note 1**: [1]Use ***Type II*** for Oxford County (with the exception of towns listed below) and Penobscot County (with the exception of towns listed below) and all Maine counties not listed below.

**Note 2**: [2]Use ***Type III*** for York, Cumberland, Androscoggin, Sagadahoc, Kennebec, Waldo, Knox, Piscataquis, Somerset, Franklin, Aroostook, Lincoln, Hancock, Washington Counties; the following Oxford County Towns: Porter, Brownfield, Hiram, Denmark, Oxford, Hebron, Buckfield, and Hartford; and the following Penobscot County towns: Dixmont, Newburgh, Hampden, Bangor, Veazie, Orono, Bradley, Clifton, Eddington, Holden, Brewer, Orrington, Plymouth, Etna, Carmel, Hermon, Glenburn, Old Town, Milford, and Greenfield.

# SECTION 12

# STORMWATER MANAGEMENT REPORT

# UNUM PROVIDENT: EMERGENCY GENERATOR PAD
# CONGRESS STREET – PORTLAND, MAINE

**Prepared for:**

**Unum Provident**
**2211 Congress Street**
**Portland, Maine 04101**

**Prepared by:**

**DeLuca-Hoffman Associates, Inc.**
**778 Main Street, Suite 8**
**South Portland, Maine 04106**

**July 2004**

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**Figures**



**Attachments**



**Cross References**

Section 11 – Soils
Section 19 – Flooding
Section 14 – Erosion and Sediment Control

**Plan References**

DeLuca-Hoffman Associates, Inc. Drawings C-1 to C-6 for the 2004 Emergency Generator Pad

## 12.0 Introduction

DeLuca-Hoffman Associates, Inc. has been retained by Unum Provident to assist in the site design and site permitting of a proposed 8,000 square foot Emergency Generator Pad at the Unum Provident Congress Street campus in Portland, Maine.

Unum Provident is proposing the addition of an emergency generator pad at the Congress Street Campus in Portland, Maine. This application for a modification for the generator pad is intended to address the items attendant with the Site Location of Development and Natural Resource Regulations and Permits of the existing campus. In order to provide flexibility for the generator pad over time, this application seeks approval for the upper limit of potential site and infrastructure needs for the emergency generator pad. Initial construction may actually result in lesser impacts and infrastructure requirements.

The application seeks approval to construct an emergency generator pad with nominal dimensions of 80 by 100 feet (8,000 square feet). The Emergency Generator Pad needs to be sited close to existing infrastructure near the mechanical feeds to H.O. #2.

It is noted that the activity at the generator pad should not affect this permit noting:

- Any air emissions licensing will be permitted separately; and
- The applicant agrees to the stipulation to submit supplemental information prior to the installation of equipment which could be considered noise pursuant to the requirements of MeDEP Air Quality Regulations 06.096.

The proposed generator pad will be located in the portion of the campus bounded to the south by Congress Street, to the west by the campus entrance drive from Congress Street, to the north by an internal driveway, and to the east by the Unum Daycare and wetlands. This area is currently forested.

The area is characterized as an upland peninsula surrounded by wetlands. The proposed activity will result in the disturbance of approximately 0.75 acres of land for the concrete pad, drive, construction of stormwater management facilities, and related site work.

The proposed site contains wetland areas but no streams. The project proposes to fill approximately 450± square feet of the wetlands located at the ditch at the proposed entrance to the site.

This narrative contains the Stormwater Management systems designed and required for this project.

The project is not in a lake watershed or a watershed most at risk from development.

## 12.1 Existing Site Conditions

The Unum Provident Campus is a large facility which holds an existing Site Location of Development Permit. This modification focuses on the immediate area where the

emergency pad would be constructed. The area as described in the introduction is about 2.80 acres with the "project area" (disturbed area) being about 0.75 acres.

Topography in the area is mild with the upland peninsula gently rising above the wetlands which surround three sides. Elevations in this area range from 86 to 74 with the elevations in the area of the proposed generator pad ranging from 86 to 76. The site conditions are depicted on Drawing C-1 of the plan set.

Drainage flows from the upland area to the adjacent wetlands and continues through the wetlands to an unnamed tributary of the Stroudwater River. The drainage is tributary to the Stroudwater River and the Fore River. These receiving waters are not listed as rivers most at risk from development, sensitive, threatened regions, or watershed.

Soils on the site are mapped on the USDA SCS Map as being Scantic silt loam. Figures 8, 9, and 10 appended to this section provide the Medium Intensity Soils, Sand and Gravel Aquifer, and Surficial Geology for the site. Bedrock is known to be relatively shallow in portions of the campus.

The site is not in a 100-year floodplain based upon the Flood Map appended to this section as Figure 7.

The site is not located in a mapped 100-year floodplain based upon the FEMA mapping and depicted on Figure 7.

The project is not in a lake watershed or a watershed most at risk from development.

DeLuca-Hoffman Associates, Inc. is not aware of any areas of existing erosion on the site or blockage which restricts existing drainage from entering the site from natural upstream areas.

## 12.2 Existing and Proposed Drainage Features

The existing drainage systems on the site are principally sheet flow from the upland knoll to the wetlands which surround three sides of the proposed site. Runoff is attenuated by storage in the wetlands before entering a culvert under Congress Street and leaving the site. Drainage ultimately is tributary to the Stroudwater and Fore Rivers.

The proposed drainage system will include formal inlets and buried piping to direct the concrete pad, gravel area, and most of the access drive to water quality units and a proposed subsurface detention facility on the southerly side of the site. Flows will be released through an outlet control structure and a riprap apron located at the southeast corner of the proposed site to disperse the flow back to the wetlands.

## 12.3 Master Plan for Stormwater Management

The stormwater management evaluations for the proposed Emergency Generator Pad considers the drainage currently emanating from the upland knoll and entering the wetlands in the small portion of the site where this generator pad is planned.

Comprehensive watershed analysis for the campus has previously evaluated the overall campus. For this project, the following is noted:

- Locations for Stormwater Discharges

  The stormwater management plan for this project uses the traditional approach of mitigating peak discharges using attenuation in a basin or reducing the watershed sizes to reduce the postdevelopment runoff rates to predevelopment levels before exiting the site.

- Alternatives for Detention

  The alternatives for detention considered include:

  - On-site open water detention
  - On-site underground storage
  - Infiltration

The underground detention system was selected due to the limited upland area of this portion of the site and the need to minimize wetland fill and because the soils are not conducive to infiltration. The disadvantage of the buried system is that it will cost substantially more than an open system and observation of performance is more difficult.

## 12.4 Alternatives for Water Quality Treatment

Water quality treatment can be afforded by natural buffers, treatment swales, wet ponds, and water quality units.

**Buffers:** The use of natural buffers is considered a practicable alternative sheet slow but not for wetland areas receiving concentrated flows emanating from pavement and rooftops at this site.

**Wet Retention Pond:** The use of a wet pond for treatment as part of the detention system was found to be impracticable for treatment of pavement and rooftop areas at this site.

**Water Quality Units:** The water quality units can achieve total suspended solids removal as required to meet the TSS standard although there performance to address the non-point runoff issues attendant with nutrients, metals, or biologic demand is less than other systems. The advantage of these units is the limited space requirements and these systems were selected for this reason.

## 12.5 References

The following reference sources were reviewed during preparation of the stormwater analysis:

1. Technical Release Number 20 – Computer Program for Project Formulation – Hydrology, USDA Soil Conservation Service, May 1983

2. Section 4 – Hydrology, USDA Soil Conservation Service, March 1985
3. Technical Release Number 55 – Urban Hydrology for Small Watersheds, USDA Soil Conservation Service, June 1986
4. Civil Engineering Reference Manual, Lindeburg, 1995
5. HydroCAD Technical Reference Manual, Applied Micro-Computer System, 2001
6. Water Supply and Pollution Control, Clark, Viessman, Hammer, 1971
7. Maine Erosion and Sedimentation Control Handbook for Construction: Best Management Practices, MeDEP, March 1991
8. Stormwater Management, Best Management Practices, MeDEP, 1996
9. Federal Highway Administration, Hydraulic Design Services No. 5 – Hydraulic Design of Culverts

The following sources were used for preparation of the stormwater quality analysis:

1. Reducing the Impacts of Stormwater Runoff from New Development – New York State Department of Environmental Conservation, April 1993.
2. Stormwater Management, Best Management Practices, MeDEP, 1996.
3. EPA – Urban Targeting and BMP Selection – Terrene Institute, November 1990.
4. Urbanization and Water Quality – Terrene Institute, March 1994.
5. A Current Assessment of Urban Best Management Practices, Techniques for Reducing Non-point Source Pollution in the Coastal Zone, U.S.E.P.A. Office of Watersheds, March 1992.
6. MeDEP Chapter 500, Stormwater Management Rules.
7. MeDEP Phosphorus Manual, Phosphorus in Lake Watersheds, Revised September 1992.

Computer programs used to assist in the various components of this analysis include:

1. HydroCAD Stormwater Modeling System, version 6.0, Applied Microcomputer Systems – used for modeling watersheds for pre and postdevelopment conditions;
2. FlowMaster 1, version 2.06, Haested Methods, Inc., 1990 – used to determine flow depths in open channel; and
3. Microsoft Excel, version 7.0, 1997, Microsoft Corporation – used for spreadsheet computations.

Data resources used to obtain the hydrologic input data for the stormwater model are identified later in this report.

## 12.6 Overview of Stormwater Runoff Modeling

The stormwater analysis evaluates seven elements of the project as follows:

1. Analysis of predevelopment and postdevelopment stormwater runoff rates;
2. Review of the potential impacts of the proposed site redevelopment and subsequent modification to site discharge rates and locations.
3. Evaluation of the requirements for stormwater management.
4. Evaluation of storm drainage conveyance requirements for access driveways, parking areas, and other improvements to direct the runoff to the proposed basin.
5. Water quality measures requirements.
6. Basin design and lining requirements; and
7. Inlet capacity of various catch basins and inlets.

## 12.7 Methods of Analysis – Stormwater Quantity

The hydrologic analyses for predevelopment and postdevelopment conditions have been conducted based upon the methodology contained in the USDA Soil Conservation Service's Technical Releases No. 20 and 55 (SCS TR-20 and TR-55) as modified for special site conditions. For Cumberland County, Maine, a 24-hour SCS Type III storm distribution was used for the analysis using the following storm frequencies and rainfall amounts:

| Storm Event | 24-Hour Rainfall |
|---|---|
| 2-Year Storm | 3.0 Inches |
| 10-Year Storm | 4.7 Inches |
| 25-Year Storm | 5.5 Inches |

The HydroCAD computer program was used in the analysis. This program determines the critical points of the project watershed and uses SCS TR-20 methodology for evaluation of the anticipated conditions at these points. Drainage areas are defined with runoff curve numbers, times of concentration, and travel time data based on methods outlined in the USDA TR-55 manual. To assess storage and kinematic effects of runoff, the model uses reservoirs and pipes to imitate actual conditions. Specific hydrologic characteristics including travel times, storage capacity, and the effects of hydraulic head are considered for analysis with this program.

To model any watershed, the drainage system is represented by a system network consisting of four basic components:

- **Subcatchment:** A relative homogenous area of land that drains into a single reach or pond. Each subcatchment generates a runoff hydrograph.
- **Reach:** A uniform stream, channel, or pipe which conveys water from one point to another reach or pond. The outflow of each reach is determined by a hydrograph routing calculation.

- **Pond:** A pond, swamp, dam, or other impoundment which fills with water from one or more sources and empties in a manner determined by a weir, culvert or other device (s) at its outlet. A pond may empty into a reach or into another pond. The outflow of each pond is also determined by a hydrograph routing calculation.
- **Link:** A multi-purpose mechanism for introducing a hydrograph from outside the diagram, by either manual entry, file import, or linkage to another diagram. A link also allows the diversion and/or scaling of hydrographs.

After identifying each of the components, the system may be represented by a routing diagram such as shown in the schematics and computations contained in Attachment A.

To calculate the outflow for each structure, HydroCAD automatically performs these steps:

1. If there is more than one inflow, the inflows are summed together to produce a single hydrograph. If a pipe is being re-sized, its diameter will be calculated to handle the peak inflow.
2. The inflow is routed through the structure using the description and method previously specified. For subcatchments, the specified storm type and rainfall are used.
3. For a reach, the peak depth, peak velocity, contact time, etc. are calculated.
4. For a pond, the peak elevation, peak storage, etc. are calculated.
5. Any warning messages are displayed.
6. For the inflow and outflow, the peak flow and time of peak are calculated by interpolating between the three highest points.
7. The total volume of inflow and outflow are calculated.
8. The results are stored in a database for subsequent calculations or examined at anytime.

The process is automatically repeated for each structure until the design point is reached. HydroCAD is a hydrograph routing model. It is designed specifically to handle time varying flows, as required for pond design and other volume-sensitive calculations. As such, HydroCAD routes completely through one structure at a time. Only after determining the outflow hydrograph from a given structure does it consider the next structure downstream.

The proposed storm drain system was designed to convey runoff from a 25-year storm event using Manning's Equation to compute full flow capacity of pipes. Flow values were checked using peak rates developed using the rational method.

Ditch scour protection was based upon methods outlined in the Maine Erosion Control BMP Handbook. A nomograph was used which provides a d50 stone size for a given ditch flow and velocity.

Land use, cover, delineation of watershed subcatchments, hydraulic flow paths and hydrologic soil types were obtained using the following data:

1. Portland East, Maine USGS 7.5 minute Quadrangles Maps.
2. Cumberland County, USDA Medium Intensity Soils Survey.
3. Onsite Topographic Survey with 2' contour intervals prepared by Sebago Technics.
4. Field Reconnaissance by DeLuca-Hoffman Associates, Inc.

## 12.8 Description of Site Watershed Model

The watershed model was developed to predict peak discharge rates emanating from the knoll and wetlands near the development area based upon the current and future conditions. For all practical purposes, the current land cover is not known to have changes since 1975 so the current conditions represent the baseline conditions for the site location of development stormwater management report.

The model allows the following analyses:

- Comparison of current storm water discharge rates with proposed conditions including the attenuation effect of detention facilities;
- Determination of flows within the pipe or channels allowing sizing, hydraulic grade lines, and velocities to be computed;

The predevelopment model also was divided into reaches and nodes which were logical for comparison with Postdevelopment conditions. A schematic of the predevelopment watershed model is included in the appended computations.

## 12.9 Predevelopment Watershed

- The current cover for the predevelopment watersheds reflect the forested cover of the area. Only a small portion of the site has lawn cover. The model was used a single catchment slightly under one acre in size.

A summary of the predevelopment watershed by hydrologic parameters is provided in the table as follows.

**TABLE 12-1**
**Predevelopment Watersheds**
**Computed Runoff and Peak Flows**

| | Runoff (inches) | | | Peak Discharge | | |
|---|---|---|---|---|---|---|
| Watershed # | 2 yr. | 10 yr. | 25 yr. | 2 yr. | 10 yr. | 25 yr. |
| 1 | 0.64 | 1.66 | 2.22 | 0.37 | 1.05 | 1.42 |

## 12.10 Postdevelopment Conditions

The post development conditions evaluated as part of this study included the various storm water management options and conveyance systems outlined above. This report presents the proposed systems selected after the various options had been considered. A schematic of the postdevelopment watershed model is included in the appended computations.

The postdevelopment conditions include the changes to land cover including 8,000 square feet of concrete pad, 7,255 square feet of pavement, 3,200 square feet of gravel, and 13,648 square feet of lawn area will exist. The RCN is elevated to 97 and the time of concentration is substantially reduced. Without detention, the following flows result:

**TABLE 12-2**
**Postdevelopment Flow without Detention**

| | Postdevelopment Runoff (in.) Peak Flows (cfs.) | | |
|---|---|---|---|
| **Watershed #** | **2 yr.** | **10 yr.** | **25 yr.** |
| 1 | 1.32 | 2.24 | 2.68 |

## 12.11 Requirement for Stormwater Management

Stormwater management is intended to provide either:

- Control of Peak Discharge Rates; or
- Measures to address Non-Point Runoff and Stormwater Quality

The need for Stormwater management can be determined by comparing the predevelopment or current flows with postdevelopment Flows. In the case of this the comparison of the points of interests without construction of detention ponds are shown in the following table:

**TABLE 12-3**
**Flow Rates at Points of Interests**
**Peak Flow Rate in cfs**
**(Without Detention)**

| POI # | Storm Event | Predevelopment | Postdevelopment |
|---|---|---|---|
| 1 | 2 year | 0.37 | 1.32 |
| | 10 year | 1.05 | 2.24 |
| | 25 year | 1.42 | 2.68 |

Stormwater Management to control of peak discharge rates is required.

This Stormwater Management will be achieved by construction of an underground storage system for the project consisting of buried infiltrators. As much of the site, including as practicable will be directed to this area. The performance of the pond has been modeled as follows:

**TABLE 12-4**

| Storm Event | Peak Inflow (cfs) | Peak Discharge (cfs) | Max Stage (ft) | Max Storage ($ft^3$) |
|---|---|---|---|---|
| 2 year | 1.20 | 0.07 | 78.42 | 1,842 |
| 10 year | 1.92 | 0.35 | 79.01 | 2,697 |
| 25 year | 2.25 | 0.45 | 79.34 | 3,151 |

The postdevelopment flows from the underground detention is convoluted with the undetained flows from the balance of the site to determine the effect of detention has on peak postdevelopment flows. These values are compared to predevelopment flows in the Table as follows:

**TABLE 12-5**
**Flow Rates at Points of Interests**
**Peak Flow Rate in cfs(With Pond)**

| POI # | Storm Event | Predevelopment | Postdevelopment |
|---|---|---|---|
| 1 | 2 year | 0.37 | 0.37 |
| | 10 year | 1.05 | 1.02 |
| | 25 year | 1.42 | 1.35 |

As shown, the proposed Stormwater provisions for control of peak discharges so as not to exceed the predevelopment flows for the 2, 10, and 25 year events.

The Stormwater Management provisions for the control of non-point runoff include water quality units. These units reflect the minimum size available and will exceed the requisite 40% TSS removal by a substantial amount as demonstrated in the supporting computations

## 12.12 Culvert and Storm Drainage Requirements

The onsite storm drain system will serve the following purposes:

1. To collect surface runoff collected from the access drives, concrete pad and services areas and immediate yard areas at catch basins or field inlets.
2. To collect surface runoff collected from low yard areas with catch basins.
3. To convey surface runoff collected from lot development areas to the water quality measures.
4. To convey surface runoff to suitable discharge points.

## 12.13 Ditch Sizing and Scour Protection

Computations for the capacity of the channel velocities, scour protection in the ditches and for the rip rap outlet aprons are provided in Appendix D.

## 12.14 Water Quality Provisions:

The proposed project will include water quality units as noted above.

## 12.15 Water Quality Standards:

The site currently discharges runoff through at multiple points to tributaries of the Fore and Stroudwater rivers.. The receiving waters are not in a lake watershed, are not considered a river, stream or brook most at risk from development, as listed in Chapter 502 of the Maine Department of Environmental Protection regulations effective December 31, 1997 and is not a coastal wetland. In accordance with Section 4.B.3.a.i., the project is required to meet the "Sliding Scale TSS Standards" due to the discharge to the open receiving waters and the development of three or more acres of structure area.

The sliding scale standard applicable to this site is a total suspended solids removal rate of 40.

Computations included in Attachment C summarize the aerial weighted average of TSS removal from the developed areas of the project site. The computations indicate the following removal efficiency for the overall project is at 55%.

## 12.16 Thermal Provisions

The project has considered potential thermal provisions and made the following provisions:

- Most pavement and concrete pad runoff is collected through a subsurface collection system and routed to the pond, a subsurface drainage system and open swales before entering streams or tributary watercourses. This avoids the direct discharge of runoff with elevated temperatures to the receiving waters.
- System underdrainage is interconnected with the storm system. Baseline groundwater will intermix with storm water to moderate the temperature.

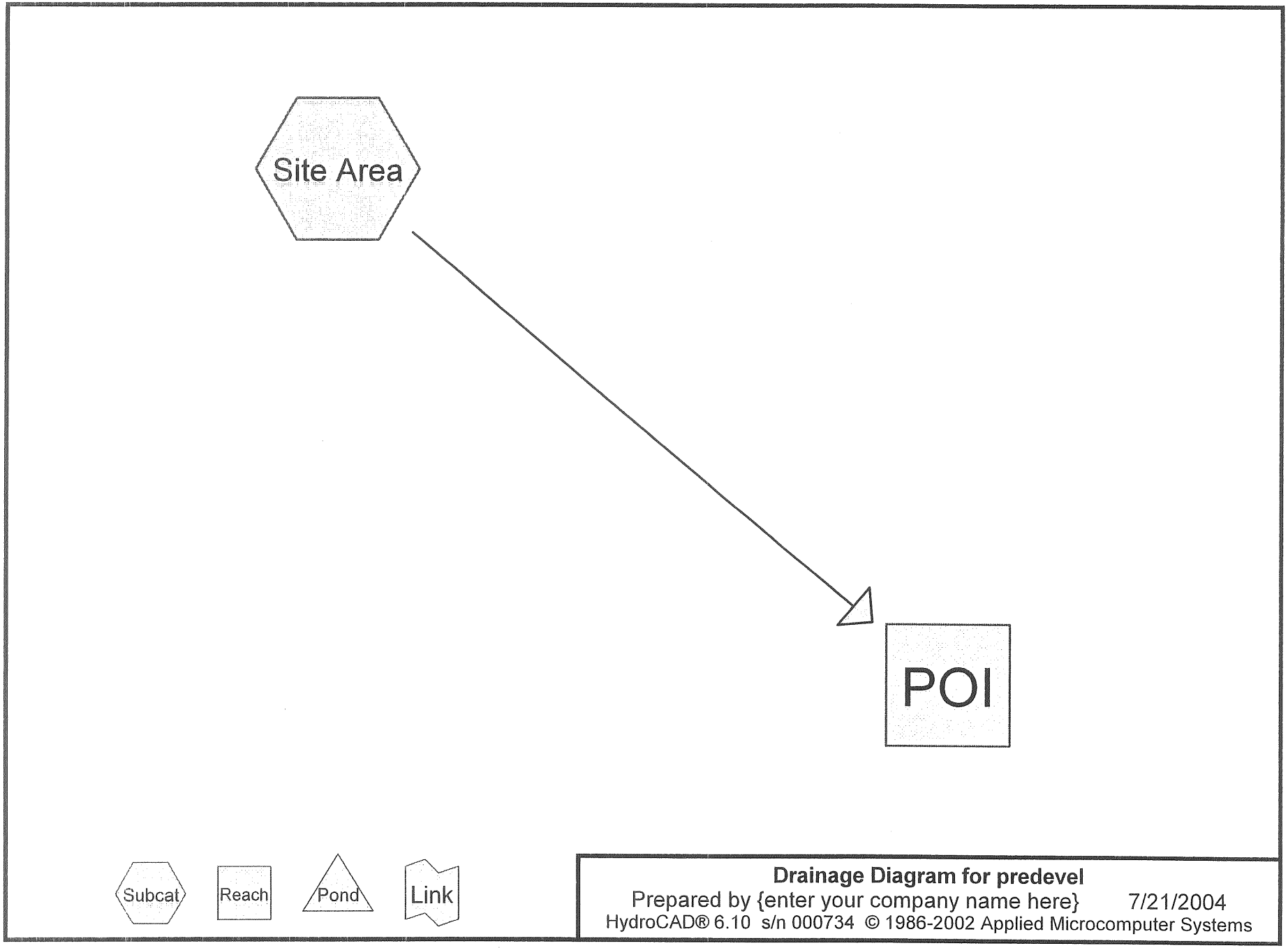
## 12.17 Conclusions

The Stormwater Management Plan for this project is anticipated to mitigate any impacts of development on stormwater runoff rates and to provide treatment of non-point pollutants in the runoff. Based on this study's findings, it is anticipated that runoff from the proposed improvements can be discharged with no adverse impact to downstream conditions and properties.

Water quality provisions have been provided for the site pursuant to the MeDEP sliding scale requirements.

# ATTACHMENT A

## Predevelopment Runoff Calculations




**Drainage Diagram for predevel**

Prepared by {enter your company name here} 7/21/2004

## Subcatchment Site Area: Site Area

Runoff = 1.42 cfs @ 12.27 hrs, Volume= 0.136 af, Depth= 2.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 990 | 74 | lawn |
| 31,113 | 70 | woods |
| 32,103 | 70 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.7 | 50 | 0.0250 | 0.1 | | **Sheet Flow, wooded**<br>Woods: Light underbrush n= 0.400 P2= 3.00" |
| 7.2 | 355 | 0.0270 | 0.8 | | **Shallow Concentrated Flow, woods**<br>Woodland Kv= 5.0 fps |
| 18.9 | 405 | Total | | | |

## Reach POI: (new Reach)

Inflow Area = 0.737 ac, Inflow Depth = 2.22"
Inflow = 1.42 cfs @ 12.27 hrs, Volume= 0.136 af
Outflow = 1.42 cfs @ 12.27 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

## Subcatchment Site Area: Site Area

Runoff = 1.05 cfs @ 12.27 hrs, Volume= 0.102 af, Depth= 1.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.70"

| Area (sf) | CN | Description |
|---|---|---|
| 990 | 74 | lawn |
| 31,113 | 70 | woods |
| 32,103 | 70 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.7 | 50 | 0.0250 | 0.1 | | **Sheet Flow, wooded**<br>Woods: Light underbrush n= 0.400 P2= 3.00" |
| 7.2 | 355 | 0.0270 | 0.8 | | **Shallow Concentrated Flow, woods**<br>Woodland Kv= 5.0 fps |
| 18.9 | 405 | Total | | | |

## Reach POI: (new Reach)

Inflow Area = 0.737 ac, Inflow Depth = 1.66"
Inflow = 1.05 cfs @ 12.27 hrs, Volume= 0.102 af
Outflow = 1.05 cfs @ 12.27 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

## Subcatchment Site Area: Site Area

Runoff = 0.37 cfs @ 12.30 hrs, Volume= 0.039 af, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

| Area (sf) | CN | Description |
|---|---|---|
| 990 | 74 | lawn |
| 31,113 | 70 | woods |
| 32,103 | 70 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.7 | 50 | 0.0250 | 0.1 | | **Sheet Flow, wooded** Woods: Light underbrush n= 0.400 P2= 3.00" |
| 7.2 | 355 | 0.0270 | 0.8 | | **Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps |
| 18.9 | 405 | Total | | | |

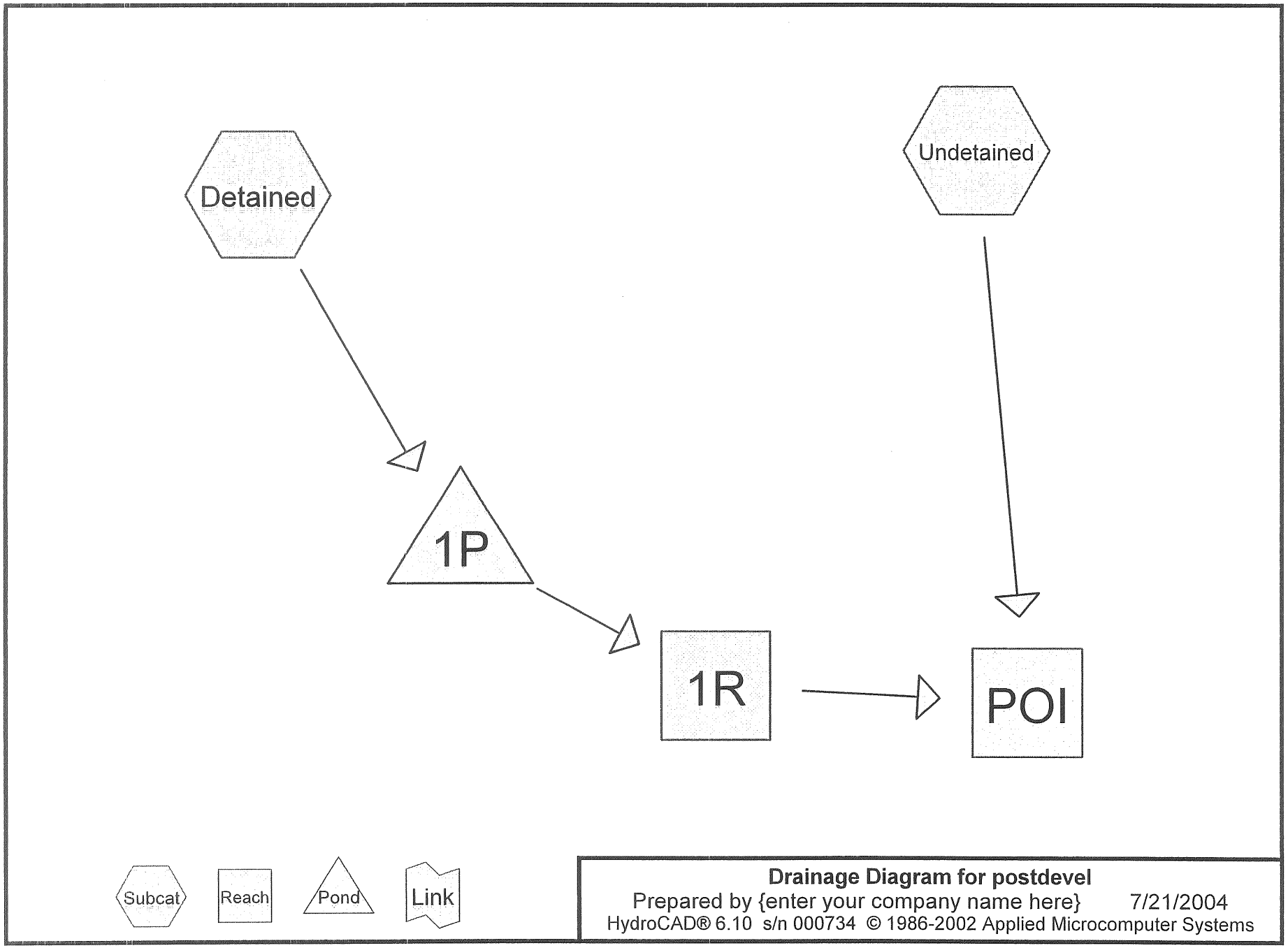
## Reach POI: (new Reach)

Inflow Area = 0.737 ac, Inflow Depth = 0.64"
Inflow = 0.37 cfs @ 12.30 hrs, Volume= 0.039 af
Outflow = 0.37 cfs @ 12.30 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

# ATTACHMENT B

## Postdevelopment Runoff Calculations




**Drainage Diagram for postdevel**

Prepared by {enter your company name here} 7/21/2004

## Subcatchment Detained: Site

Runoff = 2.25 cfs @ 12.02 hrs, Volume= 0.155 af, Depth= 4.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 13,626 | 98 | conc and paved |
| 3,200 | 91 | gravel |
| 0 | 74 | lawn |
| 16,826 | 97 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 0.8 | 55 | 0.0160 | 1.1 | | **Sheet Flow, gravel** Smooth surfaces n= 0.011 P2= 3.00" |
| 0.5 | 90 | 0.0050 | 3.2 | 2.52 | **Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 |
| 0.2 | 65 | 0.0130 | 5.2 | 4.06 | **Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 |
| 1.5 | 210 | Total | | | |

## Subcatchment Undetained: Undetained

Runoff = 0.94 cfs @ 12.21 hrs, Volume= 0.083 af, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 13,648 | 74 | lawn |
| 1,629 | 98 | paved |
| 0 | 91 | gravel |
| 15,277 | 77 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.2 | 50 | 0.0300 | 0.1 | | **Sheet Flow, grass** Grass: Dense n= 0.240 P2= 3.00" |
| 5.4 | 210 | 0.0170 | 0.7 | | **Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps |
| 0.1 | 62 | 0.0200 | 8.4 | 14.86 | **Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 |
| 2.6 | 130 | 0.0270 | 0.8 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 15.3 | 452 | Total | | | |

## Reach 1R: (new Reach)

Inflow Area = 0.386 ac, Inflow Depth = 3.71"
Inflow = 0.45 cfs @ 12.42 hrs, Volume= 0.119 af
Outflow = 0.45 cfs @ 12.45 hrs, Volume= 0.119 af, Atten= 0%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.8 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.9 fps, Avg. Travel Time= 1.8 min

Peak Depth= 0.08'
Capacity at bank full= 11.83 cfs
Inlet Invert= 76.00', Outlet Invert= 73.00'
3.00' x 0.50' deep channel, n= 0.025 Length= 100.0' Slope= 0.0300 '/'
Side Slope Z-value= 3.0 '/'

## Reach POI: (new Reach)

Inflow Area = 0.737 ac, Inflow Depth = 3.29"
Inflow = 1.35 cfs @ 12.22 hrs, Volume= 0.202 af
Outflow = 1.35 cfs @ 12.22 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

## Pond 1P: (new Pond)

Inflow Area = 0.386 ac, Inflow Depth = 4.80"
Inflow = 2.25 cfs @ 12.02 hrs, Volume= 0.155 af
Outflow = 0.45 cfs @ 12.42 hrs, Volume= 0.119 af, Atten= 80%, Lag= 23.9 min
Primary = 0.45 cfs @ 12.42 hrs, Volume= 0.119 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 79.34' Storage= 3,151 cf
Plug-Flow detention time= 135.4 min calculated for 0.119 af (77% of inflow)
An additional storage multiplier of 56.00 has been applied to the following areas and volumes

| Elevation (feet) | Cum.Store (cubic-feet) |
|---|---|
| 77.00 | 0 |
| 77.25 | 3 |
| 77.50 | 7 |
| 77.58 | 9 |
| 77.75 | 14 |
| 78.00 | 21 |
| 78.25 | 28 |
| 78.50 | 35 |
| 78.75 | 42 |
| 79.00 | 48 |
| 79.25 | 54 |
| 79.50 | 60 |
| 79.75 | 64 |
| 80.00 | 68 |
| 80.25 | 72 |
| 80.50 | 75 |

**Primary OutFlow** Max=0.45 cfs @ 12.42 hrs HW=79.34' (Free Discharge)
- **1=Orifice/Grate** (Controls 0.08 cfs)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **3=Orifice/Grate** (Controls 0.37 cfs)

| # | Routing | Invert | Outlet Devices |
|---|---|---|---|
| 1 | Primary | 76.70' | **1.4" Vert. Orifice/Grate** C= 0.600 |
| 2 | Primary | 79.40' | **0.5' long x 0.7' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50<br>Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32 |
| 3 | Primary | 78.42' | **4.0" Vert. Orifice/Grate** C= 0.600 |

## Subcatchment Detained: Site

Runoff = 1.92 cfs @ 12.02 hrs, Volume= 0.131 af, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.70"

| Area (sf) | CN | Description |
|---|---|---|
| 13,626 | 98 | conc and paved |
| 3,200 | 91 | gravel |
| 0 | 74 | lawn |
| 16,826 | 97 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 0.8 | 55 | 0.0160 | 1.1 | | **Sheet Flow, gravel** Smooth surfaces n= 0.011 P2= 3.00" |
| 0.5 | 90 | 0.0050 | 3.2 | 2.52 | **Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 |
| 0.2 | 65 | 0.0130 | 5.2 | 4.06 | **Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 |
| 1.5 | 210 | Total | | | |

## Subcatchment Undetained: Undetained

Runoff = 0.73 cfs @ 12.22 hrs, Volume= 0.064 af, Depth= 2.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.70"

| Area (sf) | CN | Description |
|---|---|---|
| 13,648 | 74 | lawn |
| 1,629 | 98 | paved |
| 0 | 91 | gravel |
| 15,277 | 77 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.2 | 50 | 0.0300 | 0.1 | | **Sheet Flow, grass** Grass: Dense n= 0.240 P2= 3.00" |
| 5.4 | 210 | 0.0170 | 0.7 | | **Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps |
| 0.1 | 62 | 0.0200 | 8.4 | 14.86 | **Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 |
| 2.6 | 130 | 0.0270 | 0.8 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 15.3 | 452 | Total | | | |

## Reach 1R: (new Reach)

Inflow Area = 0.386 ac, Inflow Depth = 3.04"
Inflow = 0.35 cfs @ 12.44 hrs, Volume= 0.098 af
Outflow = 0.35 cfs @ 12.47 hrs, Volume= 0.098 af, Atten= 0%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.6 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.9 fps, Avg. Travel Time= 2.0 min

Peak Depth= 0.07'
Capacity at bank full= 11.83 cfs
Inlet Invert= 76.00', Outlet Invert= 73.00'
3.00' x 0.50' deep channel, n= 0.025 Length= 100.0' Slope= 0.0300 '/'
Side Slope Z-value= 3.0 '/'

## Reach POI: (new Reach)

Inflow Area = 0.737 ac, Inflow Depth = 2.64"
Inflow = 1.02 cfs @ 12.23 hrs, Volume= 0.162 af
Outflow = 1.02 cfs @ 12.23 hrs, Volume= 0.162 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

## Pond 1P: (new Pond)

Inflow Area = 0.386 ac, Inflow Depth = 4.07"
Inflow = 1.92 cfs @ 12.02 hrs, Volume= 0.131 af
Outflow = 0.35 cfs @ 12.44 hrs, Volume= 0.098 af, Atten= 82%, Lag= 25.1 min
Primary = 0.35 cfs @ 12.44 hrs, Volume= 0.098 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 79.01' Storage= 2,697 cf
Plug-Flow detention time= 145.5 min calculated for 0.098 af (75% of inflow)
An additional storage multiplier of 56.00 has been applied to the following areas and volumes

| Elevation (feet) | Cum.Store (cubic-feet) |
|---|---|
| 77.00 | 0 |
| 77.25 | 3 |
| 77.50 | 7 |
| 77.58 | 9 |
| 77.75 | 14 |
| 78.00 | 21 |
| 78.25 | 28 |
| 78.50 | 35 |
| 78.75 | 42 |
| 79.00 | 48 |
| 79.25 | 54 |
| 79.50 | 60 |
| 79.75 | 64 |
| 80.00 | 68 |
| 80.25 | 72 |
| 80.50 | 75 |

**Primary OutFlow** Max=0.35 cfs @ 12.44 hrs HW=79.01' (Free Discharge)
- **1=Orifice/Grate** (Controls 0.08 cfs)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **3=Orifice/Grate** (Controls 0.27 cfs)

| # | Routing | Invert | Outlet Devices |
|---|---|---|---|
| 1 | Primary | 76.70' | **1.4" Vert. Orifice/Grate** C= 0.600 |
| 2 | Primary | 79.40' | **0.5' long x 0.7' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50<br>Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32 |
| 3 | Primary | 78.42' | **4.0" Vert. Orifice/Grate** C= 0.600 |

## Subcatchment Detained: Site

Runoff = 1.20 cfs @ 12.02 hrs, Volume= 0.081 af, Depth= 2.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

| Area (sf) | CN | Description |
|---|---|---|
| 13,626 | 98 | conc and paved |
| 3,200 | 91 | gravel |
| 0 | 74 | lawn |
| 16,826 | 97 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 0.8 | 55 | 0.0160 | 1.1 | | **Sheet Flow, gravel** Smooth surfaces n= 0.011 P2= 3.00" |
| 0.5 | 90 | 0.0050 | 3.2 | 2.52 | **Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 |
| 0.2 | 65 | 0.0130 | 5.2 | 4.06 | **Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 |
| 1.5 | 210 | Total | | | |

## Subcatchment Undetained: Undetained

Runoff = 0.32 cfs @ 12.22 hrs, Volume= 0.029 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

| Area (sf) | CN | Description |
|---|---|---|
| 13,648 | 74 | lawn |
| 1,629 | 98 | paved |
| 0 | 91 | gravel |
| 15,277 | 77 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.2 | 50 | 0.0300 | 0.1 | | **Sheet Flow, grass** Grass: Dense n= 0.240 P2= 3.00" |
| 5.4 | 210 | 0.0170 | 0.7 | | **Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps |
| 0.1 | 62 | 0.0200 | 8.4 | 14.86 | **Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 |
| 2.6 | 130 | 0.0270 | 0.8 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 15.3 | 452 | Total | | | |

## Reach 1R: (new Reach)

Inflow Area = 0.386 ac, Inflow Depth = 1.72"
Inflow = 0.07 cfs @ 13.66 hrs, Volume= 0.055 af
Outflow = 0.07 cfs @ 13.71 hrs, Volume= 0.055 af, Atten= 0%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.9 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 0.7 fps, Avg. Travel Time= 2.3 min

Peak Depth= 0.03'
Capacity at bank full= 11.83 cfs
Inlet Invert= 76.00', Outlet Invert= 73.00'
3.00' x 0.50' deep channel, n= 0.025 Length= 100.0' Slope= 0.0300 '/'
Side Slope Z-value= 3.0 '/'

## Reach POI: (new Reach)

Inflow Area = 0.737 ac, Inflow Depth = 1.36"
Inflow = 0.37 cfs @ 12.23 hrs, Volume= 0.084 af
Outflow = 0.37 cfs @ 12.23 hrs, Volume= 0.084 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

## Pond 1P: (new Pond)

Inflow Area = 0.386 ac, Inflow Depth = 2.50"
Inflow = 1.20 cfs @ 12.02 hrs, Volume= 0.081 af
Outflow = 0.07 cfs @ 13.66 hrs, Volume= 0.055 af, Atten= 94%, Lag= 98.0 min
Primary = 0.07 cfs @ 13.66 hrs, Volume= 0.055 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 78.42' Storage= 1,842 cf
Plug-Flow detention time= 188.4 min calculated for 0.055 af (69% of inflow)
An additional storage multiplier of 56.00 has been applied to the following areas and volumes

| Elevation (feet) | Cum.Store (cubic-feet) |
|---|---|
| 77.00 | 0 |
| 77.25 | 3 |
| 77.50 | 7 |
| 77.58 | 9 |
| 77.75 | 14 |
| 78.00 | 21 |
| 78.25 | 28 |
| 78.50 | 35 |
| 78.75 | 42 |
| 79.00 | 48 |
| 79.25 | 54 |
| 79.50 | 60 |
| 79.75 | 64 |
| 80.00 | 68 |
| 80.25 | 72 |
| 80.50 | 75 |

**Primary OutFlow** Max=0.07 cfs @ 13.66 hrs HW=78.42' (Free Discharge)
- **1=Orifice/Grate** (Controls 0.07 cfs)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **3=Orifice/Grate** (Controls 0.00 cfs)

| # | Routing | Invert | Outlet Devices |
|---|---|---|---|
| 1 | Primary | 76.70' | **1.4" Vert. Orifice/Grate** C= 0.600 |
| 2 | Primary | 79.40' | **0.5' long x 0.7' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50<br>Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32 |
| 3 | Primary | 78.42' | **4.0" Vert. Orifice/Grate** C= 0.600 |

# EMERGENCY GENERATOR PAD FOR UNUM PROVIDENT
# SUPPORTING SECTION NARRATIVES

## Section 2 – Title Right and Interest

The proposed project is sited on property owned by Unum Provident and as demonstrated in prior standing permits.

## Section 3 – Financial Capacity

The emergency generator pad would be funded using capital appropriations of Unum Provident. This facility is a small undertaking for a company the size of Unum Provident.

## Section 4 – Technical Ability

Unum Provident has retained DeLuca Hoffman Associates, Inc. for assistance in the preparation of the site plans and certain site permit applications for this project. Normandeau Associates has been retained as a subconsultant to DeLuca-Hoffman Associates, Inc. to provide wetland mapping and related expertise.

DeLuca Hoffman Associates, Inc. and Normandeau Associates are familiar with the State of Maine Site Location of Development Application process and have historic experience with the Site Location of Development process from prior work on other projects in the State of Maine.

Unum Provident has a full facilities staff to operate and maintain the facility. The company has prior experience from the prior permitting of major projects within the Unum campus.

## Section 5 – Noise

The potential for noise generation will depend upon the equipment selected for the emergency generator pad. The applicant is requesting the permit application contain a provision for a statement to be provided to MeDEP concerning the equipment used for the facility to be assessed for noise by qualified personnel. The MeDEP would be provided 30 days to review the information and determine if additional information or any mitigation would be required.

## Section 6 – Visual Quality and Scenic Character

The emergency generator pad will be accessed from an internal drive within the campus and set back from Congress Street by a natural deciduous buffer with a width of 120. The generator pad will also be in excess of 300 feet from the nearest abutter.

Unum Provident prides itself in its longstanding reputation of maintaining a well-manicured and attractive Congress Street campus for its clients, workforce, and image as one of the major employers in the City of Portland. The addition of the 8,000 square foot emergency generator pad will not alter this established pattern.

**Section 7 – Wildlife and Fisheries:**

This element has been previously reviewed during the prior Site Location of Development Review process.

**Section 8 – Historic Sites**

This element has been previously reviewed during the prior Site Location of Development Review process.

**Section 9 – Unusual Natural Areas**

This element has been previously reviewed during the prior Site Location of Development Review process.

**Section 10 – Buffers**

The generator pad has been sited to minimize the wetland impact. There are proposed wetland fills of about 430 square feet proposed. Using the upland to the extent possible to minimize wetland impact results in a variable but narrow width buffer to the wetlands ranging from zero along the edge of wetland fills to about 15 feet.

Visual buffers are discussed in the paragraph under Section 6.

**Section 11 – Soils**

The soils on this site are mapped by the USDA Medium Intensity Soil Survey as being Scantic. These soils are described as follows:

*"The Scantic series consists of deep, nearly level, poorly drained, medium-textured soils that are underlain by fine-textured material. These soisl formedin marine and lacustrine sediment. They are in old marine estuaries in the eastern and central parts of the country and in depressions around a few inland lakes...*

*A water table is at a depth of 1foot during most of the year, and epth to bedrock is 5 feet or more."*

Prior to construction, the applicant will engage a geotechnical consultant to conduct investigations and recommendations for the foundation systems for the project. It is not anticipated that any required geotechnical stabilization measures would increase the disturbed area for the facility.

A letter describing the wetland delineation in this portion of the campus has been prepared by Normandeau Associates, Inc. and is enclosed.

## Section 12 – Stormwater Management

A detailed Stormwater Management Plan has been prepared and is appended as a separate portion of this application.

## Section 13 –Maintenance of Common Facilities and Property

Unum Provident will maintain generator pad. The Stormwater Management Plan employs subsurface detention facilities and water quality units. As a condition of the approval, Unum Provident will enter into a contract with the vendor or a firm acceptable to MeDEP to provide the first three years maintenance of the stormwater quality units. After that time, the maintenance will be provided by Unum Provident as part of their maintenance of the overall campus system. The underground storage system will have inspection ports to permit periodic observation of the system.

## Section 14 –Erosion and Sediment Control

A detailed Erosion/Sediment Control Plan has been prepared and is appended as a separate portion of this application.

## Section 15 –Groundwater

The site is not on a sand and gravel aquifer as shown by Figure 8 in Section 1. The proposed facility will not withdraw or inject groundwater. The detention facility will be lined to prevent infiltration.

## Section 16 –Water Supply

Water supply will not be required at the concrete pad.

## Section 17 – Wastewater Disposal

No additional wastewater is proposed as part of this project.

## Section 18 –Solid Wastes

Solids wastes from the operation of the facility are anticipated to be minimal and will be handled with other wastes on the campus. Wood wastes from clearing will be chipped and used for erosion control or transported to a biomass facility.

During construction, the contractor will be responsible for identifying the disposition of all construction waste at a licensed facility.

## Section 19 –Flooding

The project is not in a mapped flood plain as shown on Figure 7 of Section 1. Stormwater Management is proposed as part of the project as outlined in Section 12.

## Section 20 – Blasting

Blasting may be required for the project based upon work on other nearby areas of the campus. However, provisions have been made in the event that blasting is required, for removal of oversized boulders, or if rock is encountered. Boulders over 3 c.y. will be measured and paid for as rock if encountered during construction. Blasted rock or boulders may be broken into a well-graded mixture under 12" in size and used as follows:

- Removed from the site.
- Processed and used as rip rap.

The measures of paragraphs 20.1 and 20.2 of this section will become part of the contract documents for construction to address the proper method for blasting encountered during construction.

### Preblast Survey

The Owner will contract with general contractors for the project. The Owner may elect a design build firm or to bid the project to General Contractors with Division 2 work included in the building bid. The General Contractor will be required to prepare a blasting plan and preblast survey prior to any rock removal. A written report of the preblast survey and blasting plan will be provided to the Owner by the Contractor and will be available for review by MeDEP. The scope of the blasting plan and preblast survey will be required to conform to the following specifications and the requirements of the Blasting Section:

- All structures within a minimum distance of 500 feet from any blasting activity shall be surveyed as part of the preblast survey. The extent beyond the 500-foot minimum shall be determined by the Contractor, their blasting subcontractor, and their insurance companies.

- A blasting plan shall be prepared which addresses:

  - Airblast limits
  - Ground vibrations
  - Maximum peak particle velocity

- The blasting plan shall meet criteria established in Chapter 3 (Control of Adverse Effects) in the Blasting Guidance Manual of the United States Department of the Interior Office of Surface Mining Reclamation and Enforcement.

- Provisions and measures to monitor and assure compliance with the blasting plan.

### Blasting

Blasting shall be performed only after approval has been given by the Owner for such operations and must comply with the following provisions:

A. The Contractor or any subcontractor shall use sufficient stemming, matting or natural *protective cover to prevent flyrock from leaving property owned or under control of the owner or operator or from entering protected natural resources or natural buffer strips. Crushed rock or other suitable material must be used for stemming when available; native gravel, drill cuttings or other material may be used for stemming only if no other suitable material is available.*

B. *The maximum allowable airblast at any inhabited building not owned or controlled by the developer may not exceed 129 decibels peak when measured by an instrument having a flat response (+ or – 3 decibels) over the range of 5 to 200 hertz.*

C. *The maximum allowable airblast at an uninhabited building not owned or controlled by the developer may not exceed 140 decibels peak when measured by an instrument having a flat response (+ or – 3 decibels) over the range of 5 to 200 hertz.*

D. *Monitoring of airblast levels is required in all cases for which a preblast survey is required by paragraph F. The Contractor may file an MeDEP Permit Modification requesting the MeDEP waive the monitoring requirement if the Contractor or subcontractor secures the permission of affected property owners to increase allowable airblast levels on their property and the Department determines that no protected natural resource will be adversely affected by the increased airblast levels. The cost to prepare the permit modification and the effect of project delay while MeDEP reviews the request shall be borne solely by the Contractor or his subcontractor.*

E. *If a blast is to be initiated by detonating cord, the detonating cord must be covered by crushed rock or other suitable cover to reduce noise and concussion effects.*

F. *A preblast survey is required and must extend a minimum radius of 2,000 feet from the blast site. The preblast survey must document any preexisting damage to structures and buildings and any other physical features within the survey radius that could reasonably be affected by blasting. Assessment of features such as pipes, cables, transmission lines and wells and other water supply systems must be limited to surface conditions and other readily available data, such as well yield and water quality. The preblast survey must be conducted prior to the initiation of blasting at the operation. The Contractor or subcontractor shall retain a copy of all preblast surveys for at least one year from the date of the last blast on the development site.*

   (1) *The Contractor or the subcontractor is not required to conduct a preblast survey on properties for which the owner or operator documents the rejection of an offer by registered letter, return receipt requested, to conduct a preblast survey. Any person owning a building within a preblast survey radius may voluntarily waive the right to a survey.*

G. *Blasting may not occur in the period between sundown and sunrise the following day or in the period 7:00 p.m. and 7:00 a.m., whichever is greater. Routine production blasting is not allowed in the daytime on Sunday. Detonation of misfires may occur outside of these times but must be reported to the Department within 5 business days of the misfire detonation. Blasting may not occur more frequently than 4 times per day. Underground production*

*blasting may be exempted from these requirements, provided that a waiver is granted by the Department.*

H. *Sound from blasting may not exceed the following limits at any protected location:*

| *Number of Blasts Per Day* | *Sound Level Limit* |
|---|---|
| *1* | *129 dbl* |
| *2* | *126 dbl* |
| *3* | *124 dbl* |
| *4* | *123 dbl* |

I. *The maximum peak particle velocity at inhabitable structures not owned or controlled by the developer may not exceed the levels established in Table 1 in paragraph J and the graph published by the United States Department of the Interior in "Bureau of Mines Report of Investigations 8507," Appendix B, Figure B-1. The Contractor or subcontractor may apply for a MeDEP Project Modification to request a variance to allow ground vibration levels greater than 2 inches per second on undeveloped property not owned or controlled by the applicant if the Department determines that no protected natural resource, unusual natural area or historic site will be adversely affected by the increased ground vibration levels. If inhabitable structures are constructed on the property after approval of the MeDEP and prior to completion of blasting, the Contractor immediately must notify the Department and modify blasting procedures to remain in compliance with the standards of this subsection. The cost to prepare the permit modification and the effect of project delay while MeDEP reviews the request shall be borne solely by the Contractor or his subcontractor.*

J. *Table 1 of this paragraph or the graph published by the United States Department of the Interior in "Bureau of Mines Report of Investigations 8507", Appendix B. Figure B-1 must be used to evaluate ground vibration effects for those blasts for which a preblast survey is required.*

(1) *Either Table 1 of this paragraph or graph published by the United States Department of the Interior in "Bureau of Mines report of Investigations 8507", Appendix B, Figure B-1 may be used to evaluate ground vibration when blasting is to be monitored by seismic instrumentation.*

(2) *Blasting measured in accordance with Table 1 of this paragraph must be conducted so that the peak particle velocity of any one of the 3 mutually perpendicular components of motion does not exceed the ground vibration limits at the distances specified in Table 1 of this paragraph.*

(3) *Seismic instruments that monitor blasting in accordance with Table 1 of this paragraph must have the instrument's transducer firmly coupled to the ground.*

(4) *An owner or operator using Table 1 of this paragraph must use the scaled-distance equation, W=(D/Ds)2, to determine the allowable charge weight of explosives to be detonated in any 8 millisecond or greater delay period without seismic monitoring, where W is equal to the maximum weight of explosives, in pounds, and D and Ds are*

*defined as in Table 1 of this paragraph. The Contractor may apply for a Permit Modification to MeDEP to authorize the use of a modified scaled-distance factor for production blasting if the contractor can demonstrate to a 95% confidence level, based upon records of seismographic monitoring at the specific site of the mining activity covered by the permit, that use of the modified scaled-distance factor will not cause the ground vibration to exceed the maximum allowable peak particle velocities of Table 1 of this paragraph. The cost to prepare the permit modification and the effect of project delay while MeDEP reviews the request shall be borne solely by the Contractor or his subcontractor.*

*(5) Blasting monitored in accordance with the graph published by the United States Department of the Interior in "Bureau of Mines Report of Investigations 8507", Appendix B, Figure B-1 must be conducted so that the continuously variable particle velocity criteria are not exceeded.*

*The Contractor may apply for a Permit Modification to MeDEP for a variance of the ground vibration monitoring requirement prior to conducting blasting at the development site if the Contractor agrees to design all blasts so that the weight of explosives per 8 millisecond or greater delay does not exceed that determined by the equation $W=(D/D_s)^2$, where W is the maximum allowable weight of explosives per delay of 8 milliseconds or greater, D is the shortest distance between any area to be blasted and any inhabitable structure not owned or controlled by the developer, and Ds equals 70 ft./lb.$^{1/2}$. As a condition of the variance, the Department may require submission of records certified as accurate by the blaster and may require the owner or operator to document compliance with the conditions of this paragraph. The cost to prepare the permit modification and the effect of project delay while MeDEP reviews the request shall be borne solely by the Contractor or his subcontractor.*

*The following is Table 1.*

| ***Distance Versus Peak Particle Velocity Method*** | | |
|---|---|---|
| ***Distance (D) from the blast area*** | ***Maximum allowable peak particle velocity (Vmax) for ground vibration (in./sec.)*** | ***Scaled-distance factor (Ds) to be applied without seismic monitoring*** |
| *0 to 300* | *1.25* | *50* |
| *301-5000* | *1.00* | *55* |
| *Greater than 5000* | *0.75* | *65* |

*K. A record of each blast, including seismographic data, must be kept for at least one year from the date of the last blast, must be available for inspection at the development or at the offices of the owner or operator if the development has been closed, completed or abandoned before the one-year limit has passed, and must contain at a minimum the following data:*

*(1) Name of blasting company or blasting contractor;*

*(2) Location, date and time of blast;*

*(3) Name, signature and social security number of blaster;*

*(4) Type of material blasted;*

*(5) Number and spacing of holes and depth of burden or stemming;*

*(6) Diameter and depth of holes;*

*(7) Type of explosives used;*

*(8) Total amount of explosives used;*

*(9) Maximum amount of explosives used per delay period of 8 milliseconds or greater;*

*(10) Maximum number of holes per delay period of 8 milliseconds or greater;*

*(11) Method of firing and type of circuit;*

*(12) Direction and distance in feet to the nearest dwelling, public building, school, church or commercial or institutional building neither owned nor controller by the developer;*

*(13) Weather conditions, including such factors as wind direction and cloud cover;*

*(14) Height or length of stemming;*

*(15) Amount of mats or other protection used;*

*(16) Type of detonators used and delay periods used;*

*(17) The exact location of each seismograph and the distance of each seismograph from the blast;*

*(18) Seismographic readings;*

*(19) Name and signature of the person operating each seismograph; and*

*(20) Names of the person and the firm analyzing the seismographic data.*

*L. All field seismographs must record the full analog wave form of each of the 3 mutually perpendicular components of motion in terms of particle velocity. All seismographs must be capable of sensor check and must be calibrated according to the manufacturer's recommendations.*

**Section 21 –Air Emissions**

Unum Provident will seek separate air emissions permits, if required, for the emergency generator pad.

**Section 22 – Odors**

No nuisance odors are anticipated from the emergency generator pad.

**Section 23 –Water Vapor**

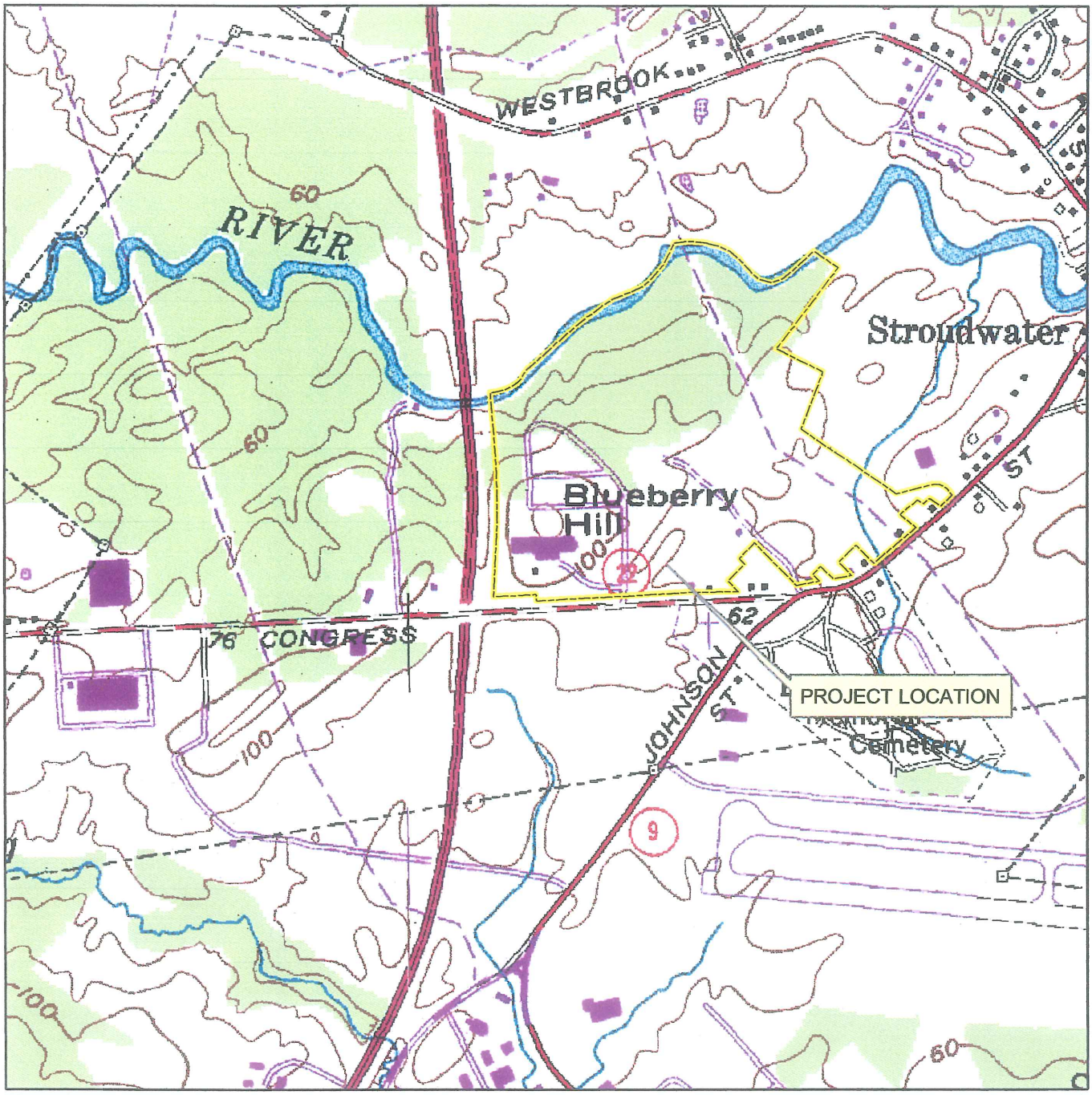
The scale of the project is insufficient to result in significant water vapors.

## Section 24 –Sunlight

The facility is located in an area within the campus where shadows onto abutting properties are not possible.

## Section 25 –Notices

It is the understanding of the Applicant and DeLuca-Hoffman Associates, Inc. that public notices are not required for a Permit Modification or Amendment.




# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# USGS TOPOGRAPHIC MAP

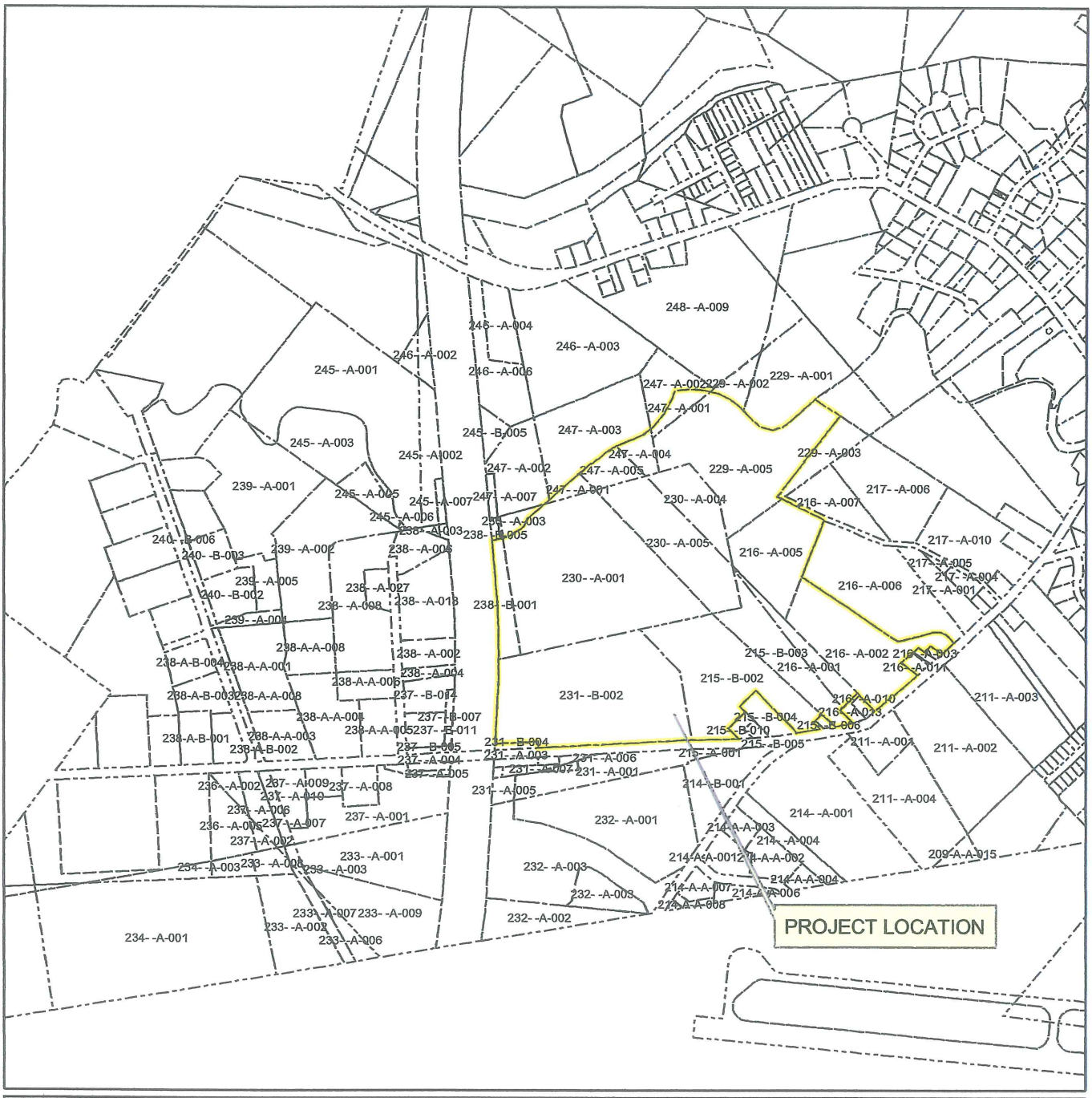
SOURCE: MAINE OFFICE OF GIS

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

| | |
|---|---|
| DRAWN: | RJK |
| CHECKED: | DDA |
| DATE: | FEB. 2004 |
| FILENAME: | |
| SCALE: | 1 inch equals 1,000 feet |

FIGURE

2




N

# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# PROPERTY TAX MAP

SOURCE: CITY OF PORTLAND GIS DEPARTMENT

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

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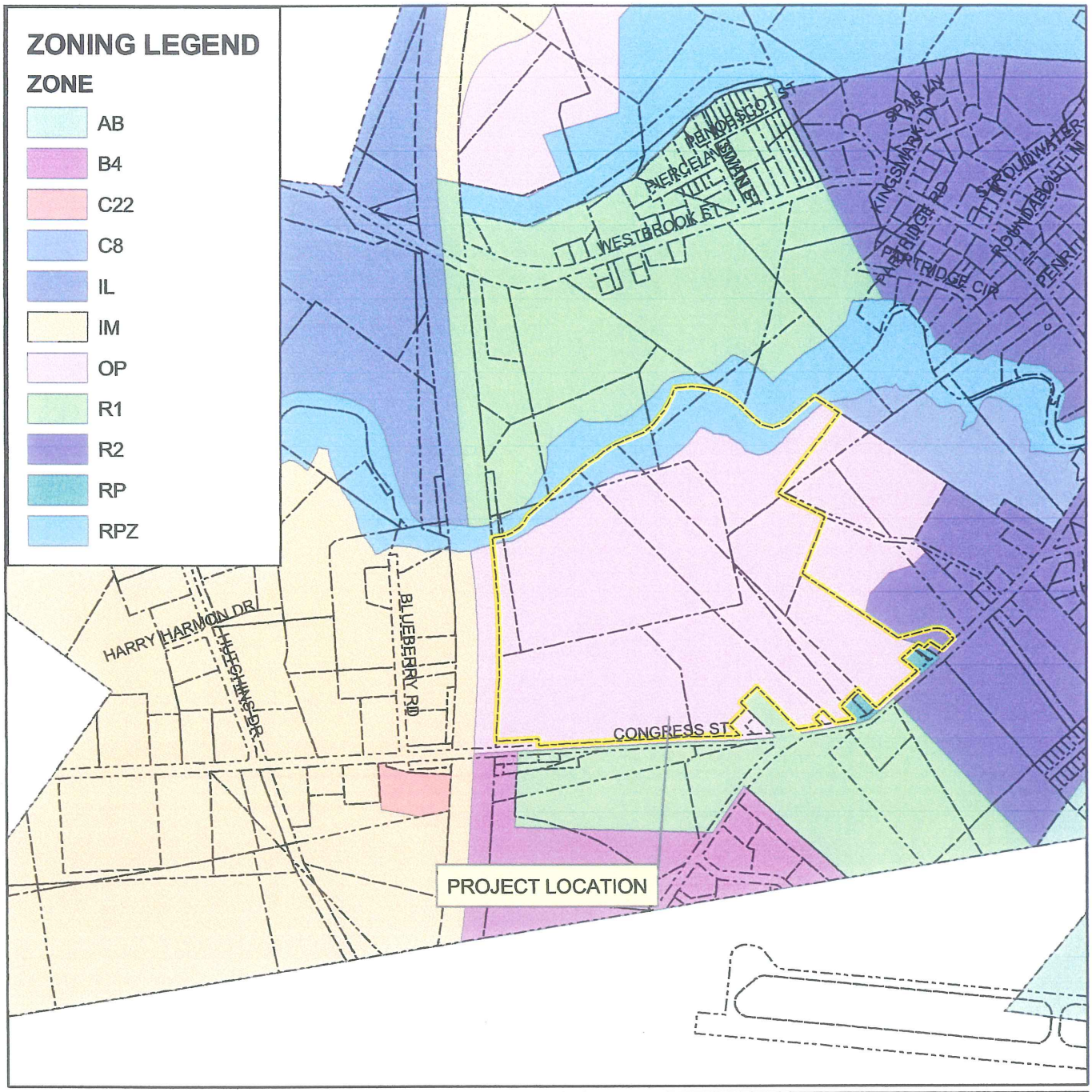
|---|---|
| DRAWN: | RJK |
| CHECKED: | DDA |
| DATE: | FEB. 2004 |
| FILENAME: | G:\2445-UNUM\FIGURES\2445-TAX-FIG3.mxd |
| SCALE: | 1 inch equals 1,000 feet |

FIGURE

3




N

# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# ZONING MAP

SOURCE: CITY OF PORTLAND GIS DEPARTMENT

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
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|---|---|
| DRAWN: | RJK |
| CHECKED: | DDA |
| DATE: | FEB. 2004 |
| FILENAME: | G:\2445-UNUM\FIGURES\2445-ZONE-FIG4.mxd |
| SCALE: | 1 inch equals 1,000 feet |

FIGURE

4


N

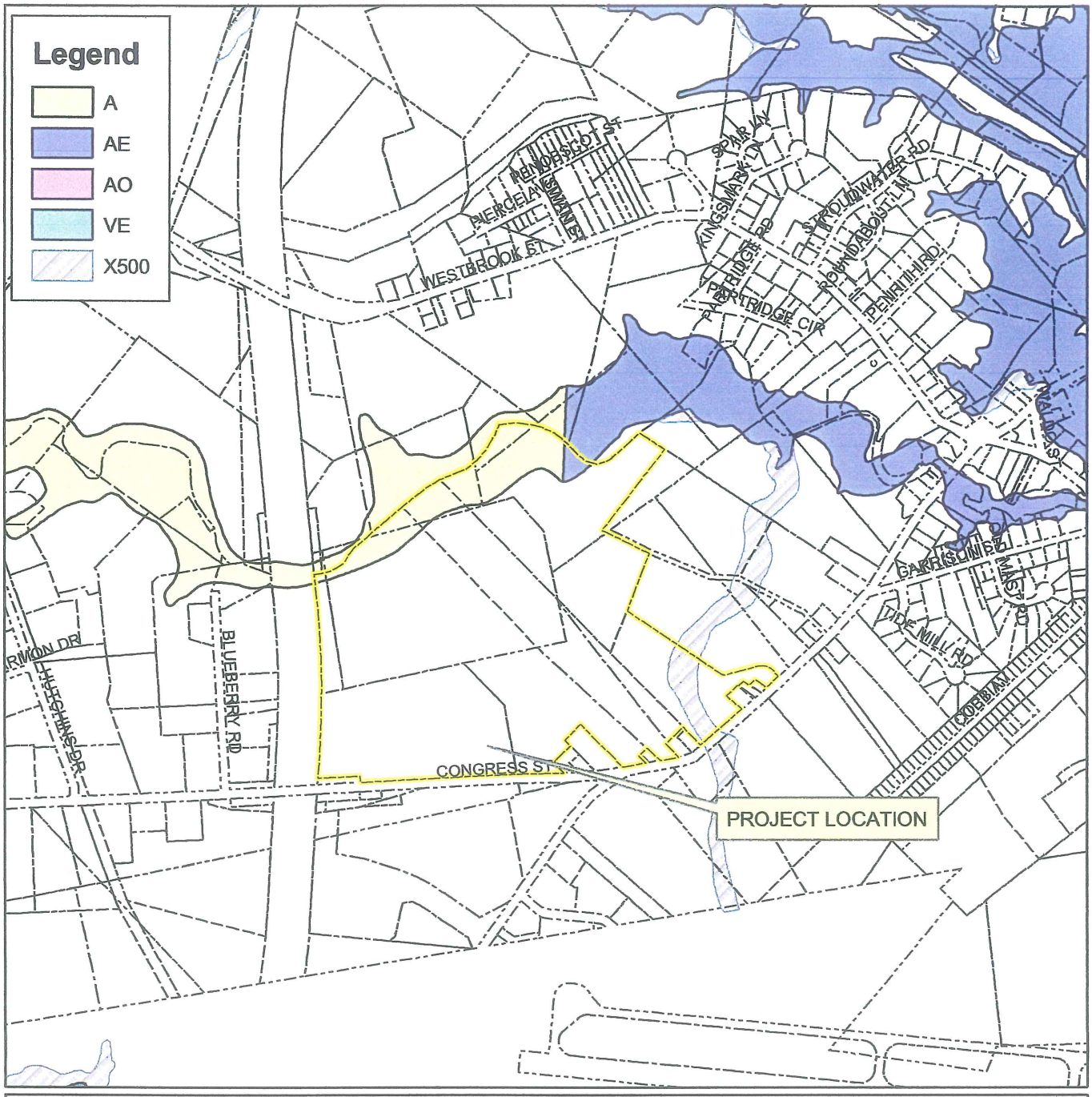
# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# AERIAL PHOTOGRAPH

SOURCE: MAINE OFFICE OF GIS

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

DRAWN: RJK
CHECKED: DDA
DATE: FEB. 2004
FILENAME:
SCALE: 1 inch equals 1,000 feet

FIGURE
5




N

# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# FLOOD MAP

SOURCE: MAINE OFFICE OF GIS

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
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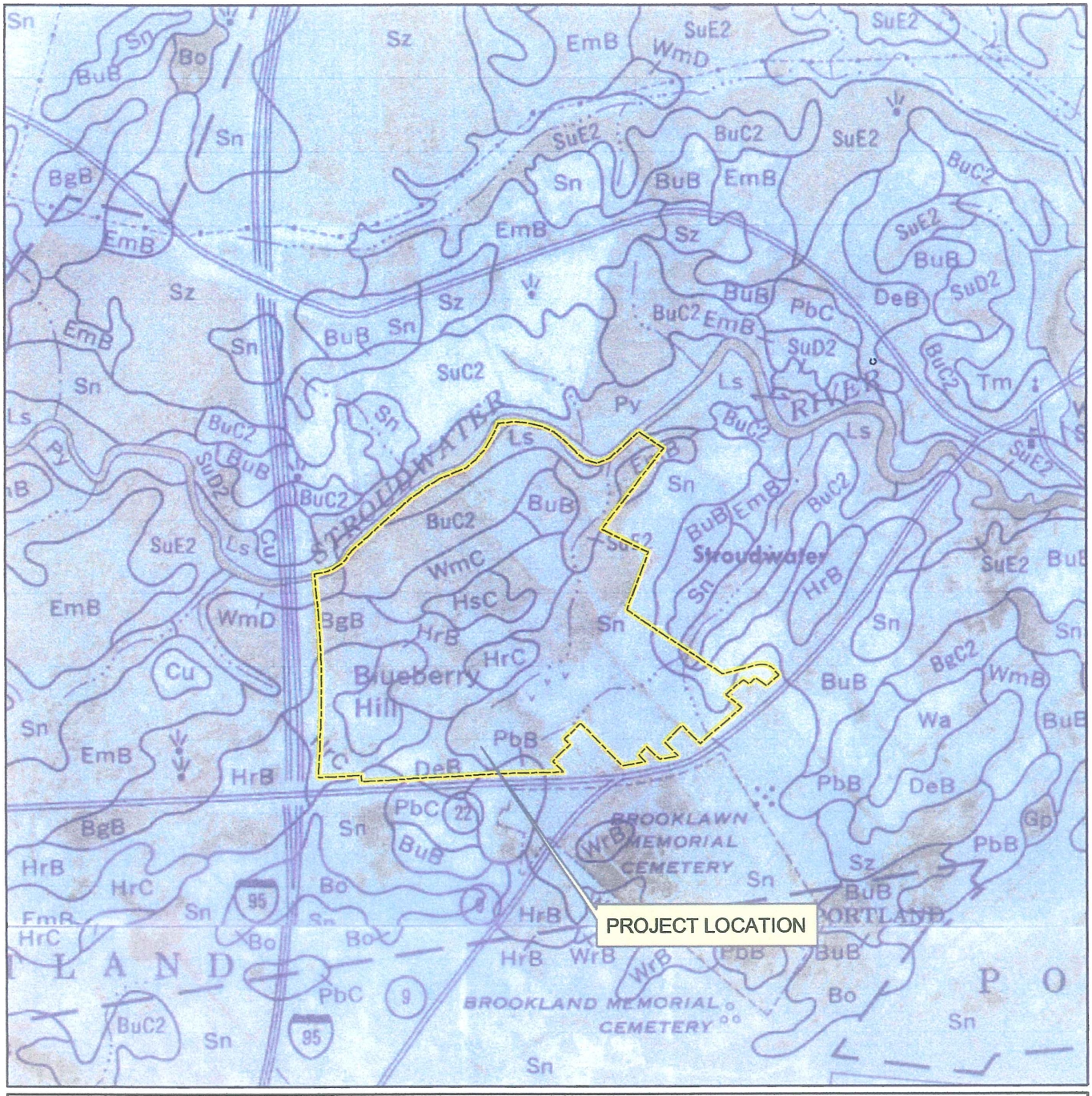
| DRAWN: | RJK |
| CHECKED: | DDA |
| DATE: | FEB. 2004 |
| FILENAME: | G:\2445-UNUM\FIGURES\2445-FLOOD-FIG7.mxd |
| SCALE: | 1 inch equals 1,000 feet |

FIGURE

7




N

# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# SOILS MAP

SOURCE: MAINE OFFICE OF GIS

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

| | |
|---|---|
| DRAWN: | RJK |
| CHECKED: | DDA |
| DATE: | FEB. 2004 |
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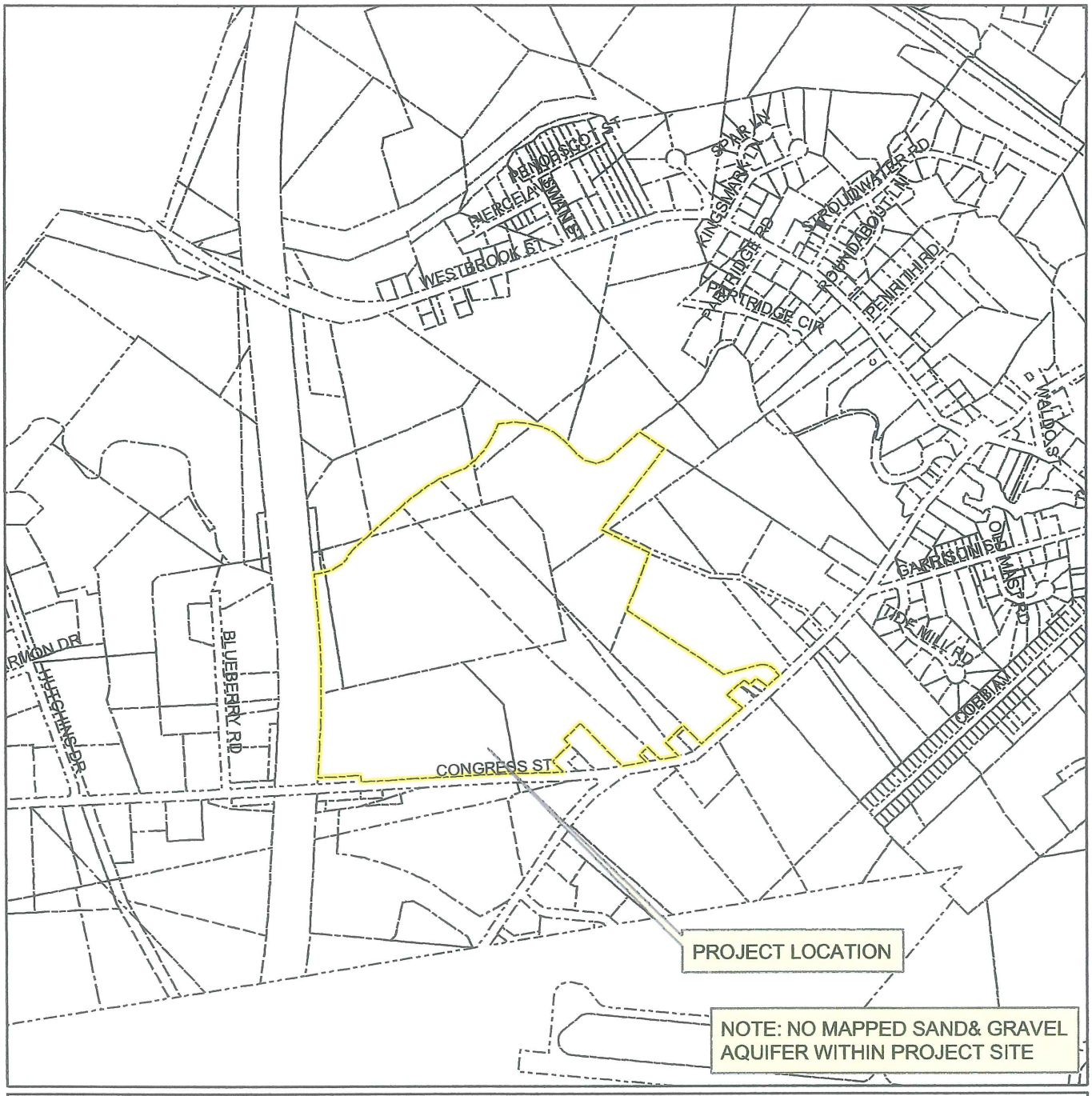
| SCALE: | 1 inch equals 1,000 feet |

FIGURE

8




N

# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# SAND & GRAVEL AQUIFER MAP

SOURCE: MAINE OFFICE OF GIS

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

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| DRAWN: | RJK |
| CHECKED: | DDA |
| DATE: | FEB. 2004 |
| FILENAME: | G:\2445-UNUM\FIGURES\2445-AQFR-FIG9.mxd |
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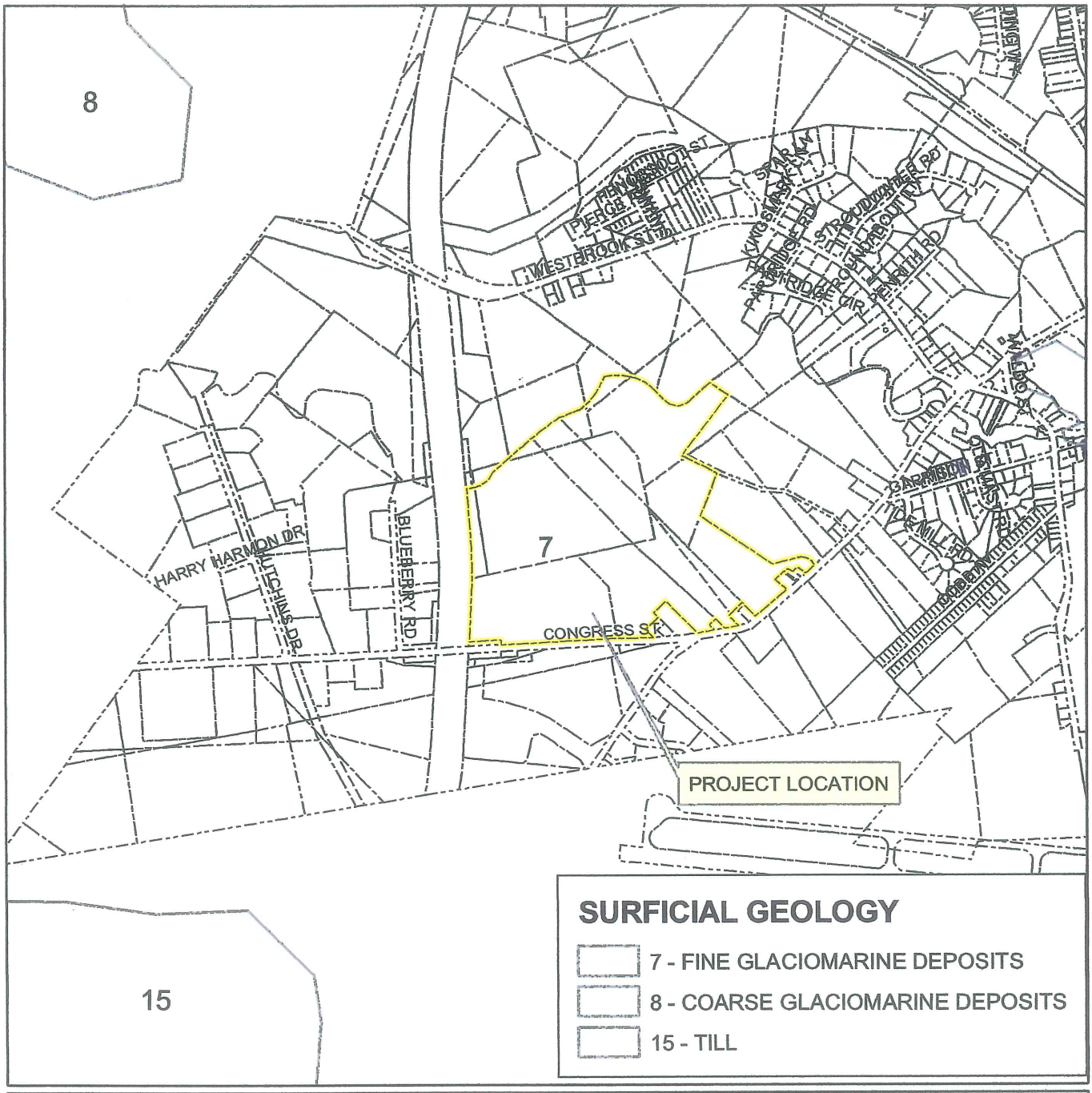
FIGURE

9




# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# SURFICIAL GEOLOGY MAP

SOURCE: MAINE OFFICE OF GIS

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
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| DRAWN: | RJK |
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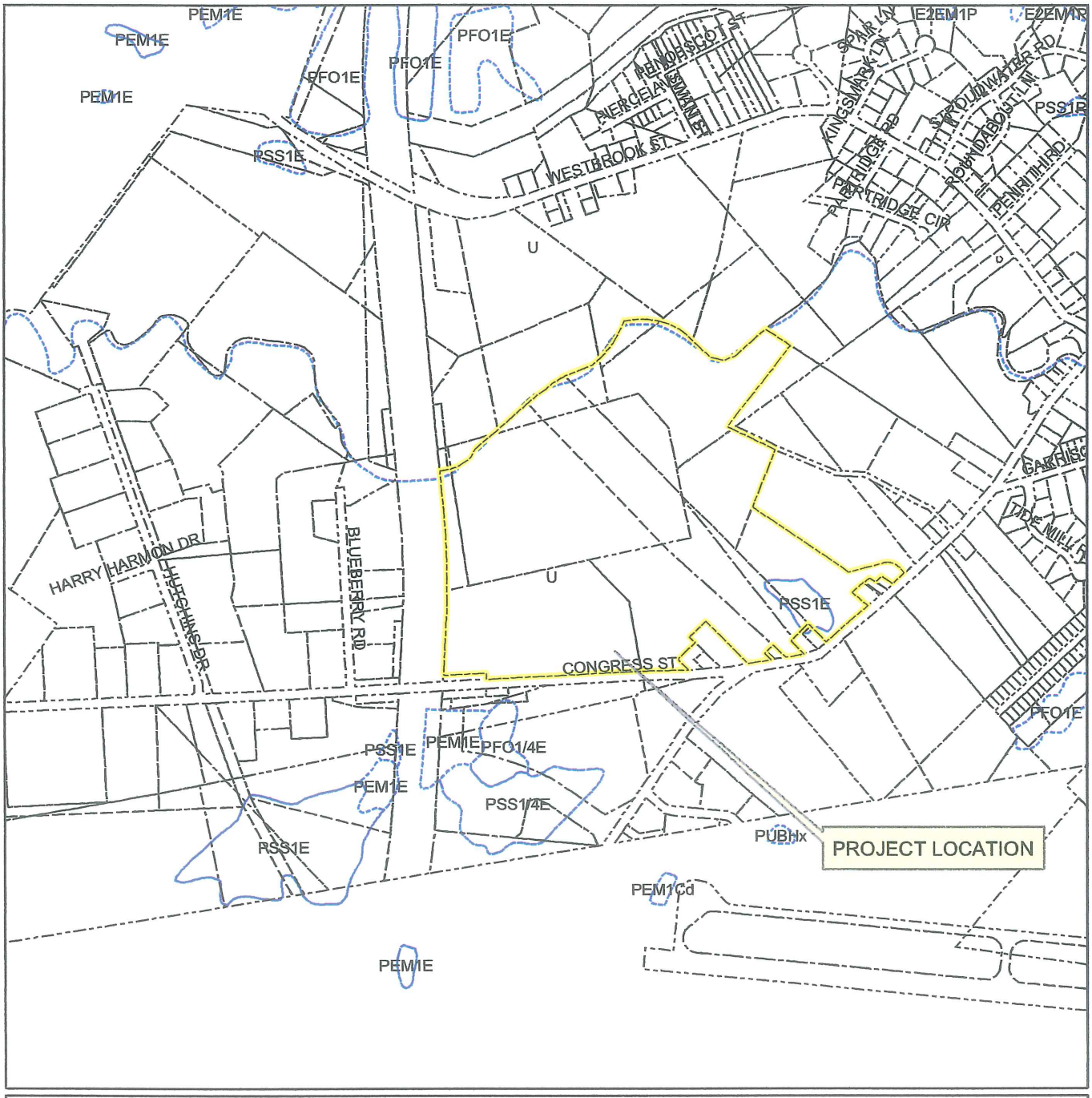
| DATE: | FEB. 2004 |
| FILENAME: | G:\2445-UNUM\FIGURES\2445-SURFGEO-FIG10.mxd |
| SCALE: | 1 inch equals 1,333 feet |

FIGURE 10




N

# ENERGY SUPPORT FACILITY
# UNUM PROVIDENT
# NATIONAL WETLANDS INVENTORY MAP

SOURCE: MAINE OFFICE OF GIS

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

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| DRAWN: | RJK |
| CHECKED: | DDA |
| DATE: | FEB. 2004 |
| FILENAME: | G:\2445-UNUM\FIGURES\2445-NWI-FIG11.mxd |
| SCALE: | 1 inch equals 1,000 feet |

FIGURE

11

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
Planning Copy

2004-0152
Application I. D. Number

07/21/2004
Application Date

Nick Najafinia, UNUM
Applicant

2211 Congress Street, Portland, ME 04122
Applicant's Mailing Address

UNUM Generator Pad
Project Name/Description

Consultant/Agent

2211 - 2211 Congress Street, Portland, Maine
Address of Proposed Site

Applicant Ph: (207) 575-5200 Agent Fax:
Applicant or Agent Daytime Telephone, Fax

231 B002
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply): ☐ New Building ☐ Building Addition ☐ Change Of Use ☐ Residential ☐ Office ☐ Retail ☐ Manufacturing ☐ Warehouse/Distribution ☐ Parking Lot ☑ Other (specify) Generator Pad

| 8,000 s.f. | | OP |
|---|---|---|
| Proposed Building square Feet or # of Units | Acreage of Site | Zoning |

**Check Review Required:**

☑ Site Plan (major/minor)
☐ Subdivision # of lots
☐ PAD Review
☐ 14-403 Streets Review
☐ Flood Hazard
☐ Shoreland
☐ HistoricPreservation
☐ DEP Local Certification
☐ Zoning Conditional Use (ZBA/PB)
☐ Zoning Variance
☐ Other

Fees Paid: Site Plan $400.00 Subdivision Engineer Review Date 07/22/2004

## Planning Approval Status:

Reviewer Sarah Hopkins

☑ **Approved**
☐ **Approved w/Conditions** See Attached
☐ **Denied**

Approval Date 09/14/2004 Approval Expiration 09/14/2005 Extension to ☐ Additional Sheets Attached

☑ OK to Issue Building Permit — Sarah Hopkins (signature) — 10/07/2004 (date)

**Performance Guarantee** ☑ **Required*** ☐ **Not Required**

* No building permit may be issued until a performance guarantee has been submitted as indicated below

| | | | |
|---|---|---|---|
| ☐ Performance Guarantee Accepted | date | amount | expiration date |
| ☑ Inspection Fee Paid | 09/29/2004 (date) | $3,293.96 (amount) | |
| ☐ Building Permit Issue | date | | |
| ☐ Performance Guarantee Reduced | date | remaining balance | signature |
| ☐ Temporary Certificate of Occupancy | date | ☐ Conditions (See Attached) | expiration date |
| ☐ Final Inspection | date | signature | |
| ☐ Certificate Of Occupancy | date | | |
| ☐ Performance Guarantee Released | date | signature | |
| ☐ Defect Guarantee Submitted | submitted date | amount | expiration date |
| ☐ Defect Guarantee Released | date | signature | |

**From:** Marge Schmuckal
**To:** Sarah Hopkins
**Date:** 09/17/2004 1:25:13 PM
**Subject:** UNUM Emergency Generator Pad

Sarah,
Thank you for the second copy of the information regarding the expected decibal readings for this module.

Section 14-230.16 - external effects within the OP Zone - limits the the volume of sound to no more than 60 dBAs at lot boundaries. The given information states that the unit meets 70 dBA at 50 feet. I have measured the pad setback at 170' to Congress Street. I am not sure what the sound readings for this unit would be at 170' compared to 50'. It would perhaps be wise to require shrubbery around the unit to help buffer the sound. This is an emergency generator and are normally tested on a weekly or monthly schedule. They usually do not run constantly.

This office should be able to do sound readings when the unit is installed to insure compliance with the 60 dBA. The applicant shall be required to agree to future adjustments if the unit can not meet the noise requirements.

Marge

**From:** "NajaFinia, Nick" <NNajafinia@unumprovident.com>
**To:** "Sarah Hopkins " <SH@portlandmaine.gov>
**Date:** 09/24/2004 2:24:21 PM
**Subject:** RE: Unum Generator Pad Project

Sarah:

With reference to our phone conversations a few minutes ago, I am writing this e-mail to confirm that we have completed the cost estimate you have asked for and sent this and the other forms (LC and Performance Guaranty) to our corporate office/financial resources in Chattanooga, TN for their immediate processing. Chattanooga is working with our bank and will have these to me ASAP, at which time I will provide them to Deluca Hoffman and they will submit them to you with the fee for your final approval.

Meanwhile, I would appreciate it if you could make an exception for UnumProvident and grant us permission to proceed with the work and allow us to mobilize and prepare the area for equipment installation and trenching. I understand this is not your standard procedure, but it would help us tremendously and keep us on track with the project schedule and major scheduled campus shut downs we have already coordinated with CMP and our many internal business units. I would tremendously appreciate the assistance of the City of Portland to UnumProvident on this extraordinary situation.

Regards,

Nick NajaFinia, P.E.
Director, Facilities Management, N.E. Region
UnumProvident Corporation
2211 Congress Street, MS: S245
Portland, ME 04122
207-575-5200 Office
207-807-2619 Mobile
207-575-1614 Fax
207-264-0235 Pager
e-mail: nnajafinia@unumprovident.com

-----Original Message-----
From: Sarah Hopkins [mailto:SH@portlandmaine.gov]
Sent: Monday, September 20, 2004 3:18 PM
To: danderson@DelucaHoffman.com; NajaFinia, Nick
Cc: JAYJR@portlandmaine.gov
Subject: RE: Unum Generator Pad Project

Nick,
Attached, please find a copy of the approval letter for the generator pad. We will require a performance guarantee for the site work. The City can hold a guarantee in an internal account if UNUM would prefer to not work with a bank. I am attaching our form for internal guantees for your review.
-Sarah

>>> "NajaFinia, Nick" <NNajafinia@unumprovident.com> 09/19/2004 10:55:01 PM >>>

Sarah,
UnumProvident is not drawing any funds from any bank on this project. As an authorized agent of our corporation I can provide you with the estimates you have requested and a letter of commitment to carry out the project to its full completion using self funding by UnumProvident and full compliance with the City, State and Federal codes and regulations. Will this work for you.

Regards,

Nick NajaFinia, P.E.
Director, Facilities Management, N.E. Region
UnumProvident Corporation
2211 Congress Street, MS: S245
Portland, ME 04122
207-575-5200 Office
207-807-2619 Mobile
207-575-1614 Fax
207-264-0235 Pager
e-mail: nnajafinia@unumprovident.com

-----Original Message-----
From: Sarah Hopkins [mailto:SH@portlandmaine.gov]
Sent: Friday, September 17, 2004 12:59 PM
To: danderson@DelucaHoffman.com
Cc: JAYJR@portlandmaine.gov; NajaFinia, Nick
Subject: Re: Unum Generator Pad Project

Dwight/Nick,
I am hoping for an approval today. In any event, we will need a performance guarantee prior to work starting. I am attaching our estimate form and the performance guarantee form. Once the estimate form is ready, Jay Reynolds will approve it and then you can secure the PG
-Sarah

>>> "Dwight Anderson" <danderson@DelucaHoffman.com> 09/17/2004 12:53:54 PM >>>

Sarah, Thanks for getting back to me today. I understand the City is reviewing the sound aspect of the project today. If you could send Nick what he needs for the performance guarantee that would be helpful. I will be out next week, so if the project is approved please contact Nick.
Dwight D. Anderson, P.E.
DeLuca-Hoffman Associates, Inc.
778 Main Street Suite 8
South Portland, Maine 04106
Phone 207.775.1121
Facsimile 207.879.0896

**CC:** <JAYJR@portlandmaine.gov>, <danderson@DelucaHoffman.com>, "Steve Bushey" <SBushey@DelucaHoffman.com>, "Rich Simonelli" <rsimonelli@esboulos.com>, "Minor, Matthew D" <mminor@unumprovident.com>, "NajaFinia, Nick" <NNajafinia@unumprovident.com>

**Department of Planning & Development**
Lee D. Urban, Director

# CITY OF PORTLAND

**Division Directors**
Mark B. Adelson
Housing & Neighborhood Services

Alexander Q. Jaegerman, AICP
Planning

John N. Lufkin
Economic Development

September 20, 2004

Nick Najafinia
UNUM
2211 Congress Street
Portland ME 04122

RE: UNUM Generator Pad
CBL: 231-B-002

Dear Mr. Najafinia:

On September 14, 2004, the Portland Planning Authority approved your plan for an emergency generator and associated pad at 2211 Congress Street as shown on the approved plan. The approval was made with the following condition:

- that prior to installation of the generator, a landscape plan showing a vegetated buffer be submitted for City review and approval.

The approval is based on the submitted site plan. If you need to make any modifications to the approved site plan, you must submit a revised site plan for staff review and approval.

Please note the following provisions and requirements for all site plan approvals:

1. Where submission drawings are available in electronic form, the applicant shall submit any available electronic CADD.DXF files with seven (9) sets of the final plans.

2. A performance guarantee/defect guarantee covering the site improvements as well as an inspection fee payment of 2.0% of the guarantee amount and 9 final sets of plans must be submitted to and approved by the Planning Division and Public Works prior to the release of the building permit. If you need to make any modifications to the approved site plan, you must submit a revised site plan for staff review and approval.

3. The site plan approval will be deemed to have expired unless work in the development has commenced within one (1) year of the approval or within a time period agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the expiration date.

4. Prior to construction, a pre-construction meeting shall be held at the project site with the contractor, development review coordinator, Public Work's representative and owner to review the construction schedule and critical aspects of the site work. At that time, the site/building contractor shall provide three (3) copies of a detailed construction schedule to the attending City representatives. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.


389 Congress Street • Portland, Maine 04101 • (207) 874-8721 • FAX 756-8258 • TTY 874-8936

5. If work will occur within the public right-of-way such as utilities, curb, sidewalk and driveway construction, a street opening permit(s) is required for your site. Please contact Carol Merritt at 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)

The Development Review Coordinator must be notified five (5) working days prior to date required for final site inspection. The Development Review Coordinator can be reached at the Planning Division at 874-8632. Please make allowances for completion of site plan requirements determined to be incomplete or defective during the inspection. This is essential as all site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact Sarah Hopkins, Development Review Services Manager at 874-8720.

Sincerely,

Alexander Jaegerman
Planning Division Director

cc: Lee D. Urban, Planning and Development Department Director
Sarah Hopkins, Development Review Services Manager
Jay Reynolds, Development Review Coordinator
Marge Schmuckal, Zoning Administrator
Gayle Guertin, Inspections
Michael Bobinsky, Public Works Director
Traffic Division
Eric Labelle, City Engineer
Jeff Tarling, City Arborist
Penny Littell, Associate Corporation Counsel
Lt. Gaylen McDougall, Fire Prevention
Assessor's Office
Approval Letter File

# DEP INFORMATION SHEET

## Appealing a Commissioner's Licensing Decision

Dated: May 2004 Contact: (207) 287-2811


SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's (DEP) Commissioner: (1) in an administrative process before the Board of Environmental Protection (Board); or (2) in a judicial process before Maine's Superior Court. This INFORMATION SHEET, in conjunction with consulting statutory and regulatory provisions referred to herein, can help aggrieved persons with understanding their rights and obligations in filing an administrative or judicial appeal.


### I. ADMINISTRATIVE APPEALS TO THE BOARD

#### LEGAL REFERENCES

DEP's *General Laws*, 38 M.R.S.A. § 341-D(4), and its *Rules Concerning the Processing of Applications and Other Administrative Matters* (Chapter 2), 06-096 CMR 2.24 (April 1, 2003).

#### HOW LONG YOU HAVE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written notice of appeal within 30 calendar days of the date on which the Commissioner's decision was filed with the Board. Appeals filed after 30 calendar days will be rejected.

#### HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, c/o Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017; faxes are acceptable for purposes of meeting the deadline when followed by receipt of mailed original documents within five (5) working days. Receipt on a particular day must be by 5:00 PM at DEP's offices in Augusta; materials received after 5:00 PM are not considered received until the following day. The person appealing a licensing decision must also send the DEP's Commissioner and the applicant a copy of the documents. All the information listed in the next section must be submitted at the time the appeal is filed. Only the extraordinary circumstances described at the end of that section will justify evidence not in the DEP's record at the time of decision being added to the record for consideration by the Board as part of an appeal.

#### WHAT YOUR APPEAL PAPERWORK MUST CONTAIN

The materials constituting an appeal must contain the following information at the time submitted:

1. *Aggrieved Status.* Standing to maintain an appeal requires the appellant to show they are particularly injured by the Commissioner's decision.
2. *The findings, conclusions or conditions objected to or believed to be in error.* Specific references and facts regarding the appellant's issues with the decision must be provided in the notice of appeal.
3. *The basis of the objections or challenge.* If possible, specific regulations, statutes or other facts should be referenced. This may include citing omissions of relevant requirements, and errors believed to have been made in interpretations, conclusions, and relevant requirements.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.

5. *All the matters to be contested.* The Board will limit its consideration to those arguments specifically raised in the written notice of appeal.

6. *Request for hearing.* The Board will hear presentations on appeals at its regularly scheduled meetings, unless a public hearing is requested and granted. A request for public hearing on an appeal must be filed as part of the notice of appeal.

7. *New or additional evidence to be offered.* The Board may allow new or additional evidence as part of an appeal only when the person seeking to add information to the record can show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process or show that the evidence itself is newly discovered and could not have been presented earlier in the process. Specific requirements for additional evidence are found in Chapter 2, Section 24(B)(5).

### Other Considerations in Appealing a Decision to the Board

1. *Be familiar with all relevant material in the DEP record.* A license file is public information made easily accessible by DEP. Upon request, the DEP will make the material available during normal working hours, provide space to review the file, and provide opportunity for photocopying materials. There is a charge for copies or copying services.

2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer questions regarding applicable requirements.

3. *The filing of an appeal does not operate as a stay to any decision.* An applicant proceeding with a project pending the outcome of an appeal runs the risk of the decision being reversed or modified as a result of the appeal.

### What to Expect Once You File a Timely Appeal with the Board

The Board will formally acknowledge initiation of the appeals procedure, including the name of the DEP project manager assigned to the specific appeal, within 15 days of receiving a timely filing. The notice of appeal, all materials accepted by the Board Chair as additional evidence, and any materials submitted in response to the appeal will be sent to Board members along with a briefing and recommendation from DEP staff. Parties filing appeals and interested persons are notified in advance of the final date set for Board consideration of an appeal or request for public hearing. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision. The Board will notify parties to an appeal and interested persons of its decision.

## II. Appeals to Maine Superior Court

Maine law allows aggrieved persons to appeal final Commissioner licensing decisions to Maine's Superior Court, see 38 M.R.S.A. § 346(1); 06-096 CMR 2.26; 5 M.R.S.A. § 11001; & MRCivP 80C. Parties to the licensing decision must file a petition for review within 30 days after receipt of notice of the Commissioner's written decision. A petition for review by any other person aggrieved must be filed within 40-days from the date the written decision is rendered. The laws cited in this paragraph and other legal procedures govern the contents and processing of a Superior Court appeal.

### Additional Information

If you have questions or need additional information on the appeal process, contact the DEP's Director of Procedures and Enforcement at (207) 287-2811.

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**Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.**

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SEP 17 2004

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE HOUSE STATION 17 AUGUSTA, MAINE 04333

DEPARTMENT ORDER

IN THE MATTER OF

| | |
|---|---|
| UNUM PROVIDENT | ) SITE LOCATION OF DEVELOPMENT |
| Portland, Cumberland County | ) |
| EMERGENCY GENERATOR PAD PHASE I | ) MODIFICATION |
| L-18486-26-K-M (approval) | ) FINDINGS OF FACT AND ORDER |

Pursuant to the provisions of 38 M.R.S.A. Sections 481 et seq., the Department of Environmental Protection has considered the application of UNUM PROVIDENT with the supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. PROJECT DESCRIPTION:

A. History: In Board Order #61-7521-05170, dated September 9, 1981, the Board approved the development of a 20,000 square foot data processing center. The development is located off Route 202 in the City of Portland. In Department Order #L-18486-26-A-N dated March 3, 1994, the Department approved the development of a 4-story office building with associated facilities. Subsequent Board and Department Orders approved additional construction and revisions to the site layout.

B. Summary: The applicant proposes to upgrade the electrical service of the UNUM Campus. In Phase I will include the installation of underground utilities from the main access drive to a 40-foot by 80-foot switch gear and transformer pad area. The pad area will be constructed of crushed stone, resulting in approximately 3,600 square feet of new impervious surface. Phase II, which is not being permitted at this time, will include the construction of a 80-foot by 100-foot concrete pad, the associated stormwater management system, and paved access road to the switch gear and transformer pad area.

C. Current Use of Site: The site is currently developed with several buildings and parking areas.

2. FINDING:

The proposed project is a minor change and will not significantly affect any issues identified during previous Department reviews of the project site.

Based on its review of the application, the Department finds the requested modification to be in accordance with all relevant Departmental standards. All other findings of fact,

conclusions and conditions remain as approved in Department Order #L-18486-26-A-N, and subsequent orders.

BASED on the above findings of fact, and subject to the conditions listed below, the Department makes the following conclusions pursuant to 38 M.R.S.A. Sections 481 et seq.:

A. The applicant has provided adequate evidence of financial capacity and technical ability to develop the project in a manner consistent with state environmental standards.

B. The applicant has made adequate provision for fitting the development harmoniously into the existing natural environment and the development will not adversely affect existing uses, scenic character, air quality, water quality or other natural resources in the municipality or in neighboring municipalities.

C. The proposed development will be built on soil types which are suitable to the nature of the undertaking and will not cause unreasonable erosion of soil or sediment nor inhibit the natural transfer of soil.

D. The proposed development meets the standards for storm water management in Section 420-D and the standard for erosion and sedimentation control in Section 420-C.

E. The proposed development will not pose an unreasonable risk that a discharge to a significant groundwater aquifer will occur.

F. The applicant has made adequate provision of utilities, including water supplies, sewerage facilities, solid waste disposal and roadways required for the development and the development will not have an unreasonable adverse effect on the existing or proposed utilities and roadways in the municipality or area served by those services.

G. The activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties nor create an unreasonable flood hazard to any structure.

THEREFORE, the Department APPROVES the application of UNUM PROVIDENT to construct Phase I of the upgrade the electrical service of the UNUM Campus, SUBJECT TO THE FOLLOWING CONDITIONS and all applicable standards and regulations:

1. The Standard Conditions of Approval, a copy attached.

2. In addition to any specific erosion control measures described in this or previous orders, the applicant shall take all necessary actions to ensure that its activities or those of its agents do not result in noticeable erosion of soils or fugitive dust emissions on the site during the construction and operation of the project covered by this approval.

3. All other Findings of Fact, Conclusions and Conditions remain as approved in Department Order #L-18486-26-A-N, and subsequent orders, and are incorporated herein.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED AT AUGUSTA, MAINE, THIS 14TH DAY OF September, 2004.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

By: _____ for
DAWN R. GALLAGHER, COMMISSIONER

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES...

Date of initial receipt of application August 16, 2004
Date of application acceptance September 3, 2004

Date filed with Board of Environmental Protection
RLG/ATS53034/L18486KM

FILED
SEP 14 2004
BOARD OF ENVIRONMENTAL PROT.
STATE OF MAINE

## SITE LOCATION OF DEVELOPMENT (SITE)
## STANDARD CONDITIONS

**STRICT CONFORMANCE WITH THE STANDARD AND SPECIAL CONDITIONS OF THIS APPROVAL IS NECESSARY FOR THE PROJECT TO MEET THE STATUTORY CRITERIA FOR APPROVAL.**

1. **This approval is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. Any variation from the plans, proposals and supporting documents is subject to the review and approval of the Board prior to implementation. Further subdivision of proposed lots by the applicant or future owners is specifically prohibited, without prior approval by the Board of Environmental Protection, and the applicant shall include deed restrictions to this effect.**

2. **The applicant shall secure and comply with all applicable Federal, State and local licenses, permits, authorizations, conditions, agreements, and orders, prior to or during construction and operation as appropriate.**

3. **The applicant shall submit all reports and information requested by the Board or Department demonstrating that the applicant has complied or will comply with all conditions of this approval. All preconstruction terms and conditions must be met before construction begins.**

4. **Advertising relating to matters included in this application shall refer to this approval only if it notes that the approval has been granted WITH CONDITIONS, and indicates where copies of those conditions may be obtained.**

5. **Unless otherwise provided in this approval, the applicant shall not sell, lease, assign or otherwise transfer the development or any portion thereof without prior written approval of the Board where the purpose or consequence of the transfer is to transfer any of the obligations of the developer as incorporated in this approval. Such approval shall be granted only if the applicant or transferee demonstrates to the Board that the transferee has the technical capacity and financial ability to comply with conditions of this approval and the proposals and plans contained in the application and supporting documents submitted by the applicant.**

6. **If the construction or operation of the activity is not begun within two years, this approval shall lapse and the applicant shall reapply to the Board for a new approval. The applicant may not begin construction or operation of the development until a new approval is granted. Reapplications for approval shall state the reasons why the development was not begun within two years from the granting of the initial approval and the reasons why the applicant will be able to begin the activity within two years from the granting of a new approval, if granted. Reapplications for approval may include information submitted in the initial application by reference.**

7. **If the approved development is not completed within five years from the date of the granting of approval, the Board may reexamine its approval and impose additional terms or conditions or prescribe other necessary corrective action to respond to significant changes in circumstances which may have occurred during the five-year period.**

8. **A copy of this approval must be included in or attached to all contract bid specifications for the development.**

9. **Work done by a contractor pursuant to this approval shall not begin before the contractor has been shown by the developer a copy of this approval.**

(2/81)/Revised November 1, 1979

DEPLW 148

DeLUCA-HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 8
SOUTH PORTLAND, MAINE 04106
TEL. 207 775 1121
FAX 207 879 0896

- SITE PLANNING AND DESIGN
- ROADWAY DESIGN
- ENVIRONMENTAL ENGINEERING
- PERMITTING
- AIRPORT ENGINEERING
- CONSTRUCTION ADMINISTRATION
- TRAFFIC STUDIES AND MANAGEMENT

September 20, 2004

Mr. Bob Green
Maine Department of Environmental Protection
312 Canco Road
Portland, ME 04103

**Subject:** **Emergency Generator Pad Phase II**
**Maine DEP Site Location of Development Permit Amendment Application**
**UNUM Campus, Portland, ME**

Dear Mr. Green:

Enclosed please find 3 copies of the Permit Amendment application for the Emergency Generator Pad Phase II at the UNUM Campus in Portland, Maine. The purpose of the Emergency Generator Pad project is to provide an upgrade for the electrical service of the UNUM Campus. Power is currently applied through Home Office #1 and then distributed to the other two buildings on campus. In the event of power supply problems at Home Office #1, the entire campus loses power. The proposed improvements will provide a centralized loop system and backup generation capability that will maintain power supply to the campus. Phase I of the project was previously approved as a project modification by the MeDEP.

The Phase I portion of the project included only the underground utility installation from along the main access drive to the area of the switchgear and transformer pad area. The 40-foot by 80-foot switch gear and transformer pad area were also part of Phase I. The limits of the Phase I work are shown on the attached project drawings. This work is expected to begin construction this week.

The Phase II portion of the Emergency Generator Pad project will include all work associated with the 80 foot by 100 foot concrete pad, stormwater system controls, and the paved access drive coming in from the north. The limits of the Phase II work are shown on the attached project drawings. Construction of Phase II of the project will begin immediately after MeDEP approval. We understand that the review period for a permit amendment is approximately 90 days.

If you have any questions or comments regarding this application, please contact our office.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.

Dwight D. Anderson, P.E.
Senior Engineer

DDA/da/JN2445/Green09-20-04SLDPA-Phase II

Enclosure

c: Nick Najafinia, UNUM Provident w/ Enclosure
Sarah Hopkins, City of Portland w/ Enclosure

Department of Environmental Protection
Bureau of Land & Water Quality
17 State House Station
Augusta, Maine 04333
Telephone: 207-287-2111

FOR DEP USE
ATS #_____
L- _____
Total Fees: _____
Date: Received _____

**FORM A PAGE 1 02/02**

**********

**PERMIT APPLICATION**
**SITE LOCATION OF DEVELOPMENT LAW, 38 M.R.S.A. § § 481-490**

**Please type or print:**

This application is for (check the one that applies)

| | | | | |
|---|---|---|---|---|
| 20 acre development | | Structure | | |
| Planning Permit | | Subdivision | | |
| Metallic Mining | | Amendment | X | |
| Marine Oil Terminal | | | | |

Name of Applicant: UNUM Provident (Attn: Nick Najafinia

Address: 2211 Congress Street, Portland, ME 04101 Telephone/Fax: (207) 575-5200

Name of local contact or agent: Dwight D. Anderson, P.E. DeLuca-Hoffman

Address: 778 Main Street, Suite 8, South Portland, ME 04106 Telephone/Fax: 775-1121 / 879-0896

Name of development: Emergency Generator Pad - Phase II

Location of development including road, street, or nearest route number: 2211 Congress Street (Route 22) to the right of the main access drive

For entrance road (if available): UTM Northing 4834070.04 UTM Easting 393055.25 (meters)

City/Town/Plantation: Portland, County: Cumberland, Tax Map # 231, Lot # B-002

Type of development: Emergency Generator Pad

Was this development started prior to obtaining a license? No Is this development or any portion of the site currently subject to enforcement action? No

Will a Natural Resources Protection Act (NRPA) permit be required for this project? * Has the NRPA permit application (PBR, Tier, full NRPA) been submitted as part of this application? No

Will a Traffic Permit be required for this project? NO Has the Maine Department of Transportation been contacted? NO

Is the development located in the watershed of a body of water most at risk or in a sensitive or threatened region or watershed? NO If yes, which one? NA

Existing DEP permit number (if applicable): L-18486-26

Name(s) of department staff person(s) present at the pre-application meeting: Bob Green

Name(s) of department staff person(s) otherwise contacted concerning this application: Bob Green

* Possibly a PBR - (14 day review period) - Look for direction from staff.

## CERTIFICATION

The person responsible for preparing this application and/or attaching pertinent site and design information hereto, by signing below, certifies that the application for development approval is complete and accurate to the best of his/her knowledge.

Signature: _____

Name (print): Dwight Anderson P.E.

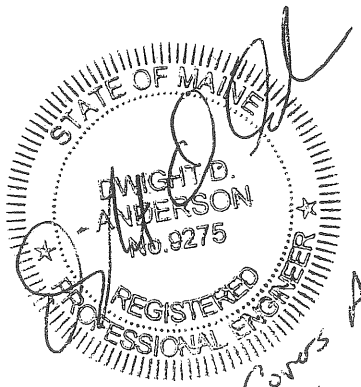
Date: 9/17/04

Re/Cert/Lic No.: #9275
Engineer Dwight Anderson P.E.
Geologist _____
Soil Scientist _____
Land Surveyor _____
Site Evaluator _____
Active Member of the Maine Bar _____
Professional Landscape Architect _____
Other _____

If the signature below is not the applicant's signature, attach letter of agent authorization signed by applicant.

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

_____ 9/17/04
Signature of applicant Date




Stamp Covers Attached Reports

FORM D 02/02

## NOTICE CERTIFICATION

By signing below, the applicant (or authorized agent) certifies that he or she has

1. Published a Notice of Intent to File once in a newspaper circulated in the area where the project site is located within thirty days prior to the filing of the application;

2. Sent by certified mail a completed copy of the Notice of Intent to File to the owners of the property abutting the land upon which the project site is located within thirty days prior to the filing of the application;

3. Sent by certified mail a completed copy of the Notice of Intent to File and filed a duplicate of this application with the town clerk or city clerk of the municipality(ies) where the project is located; and

4. Provided notice of and held a public informational meeting in accordance with Chapter 2, Rules Concerning the Processing of Applications, Section 8, prior to filing the application. Notice of the meeting was sent by certified mail to abutters and to the town clerk or city clerk of the municipality(ies) where the project is located at least 10 days prior to the meeting. Notice of the meeting was also published once in a newspaper circulated in the area where the project site is located at least 7 days prior to the meeting. (NOTE: A Public Informational Meeting is not required for residential subdivisions with 20 or fewer developable lots.)

Approximately 0 members of the public attended the Public Informational Meeting.

N. Najafi

Signature of Applicant

9/17/04

Date

Nick Najafinia, Director of Facilities

Print name and title of Applicant

If signature is other than that of the applicant, attach letter of agent authorization signed by applicant.

## Legal Advertising

LEGAL ADVERTISEMENT

PUBLIC NOTICE:
NOTICE OF INTINT
TO FILE
AND
PUBLIC INFORMATONAL
MEETING

Please take notice that UNUM Provident, attn: Nick Najafinia, 2211 Congress Street, Portand, Me 04101, phone 207-575-5200 is intending to file a Site Location of Development Act permit application with the Maine Department of Environmental Protection pursuant to the provisions of 38 M.R.S.A. § § 481 thru 490 on or about September 20, 2004

The application is for the Construction of the Emergency Generator Pad project (Phase II) at UNUM's Congress Street facility. The project includes construction of an 80' by 100' concrete pad, associated stormwater system controls, utilities and a paved access drive for emergency power generators. at the following location:

UNUM Provident Campus at 2211 Congress Street, Portland, Me 04101 to the east of the main access drive.

A request for a public hearing or a request that the Board of Environmental assume jurisdiction over this application must be received by the Department, in writing, no later than 20 days after the application is found by the Department to be complete and is accepted for processing. A public hearing may or may not be held at the discretion of the Commissioner or Board of Environmental Protection. Public comment on the application will be accepted throughout the processing of the application.

The application will be filed for public inspection at the Department of Environmental Protection's office in Portland during normal working hours. A copy of the application may also be seen at the municipal offices in Portland, Maine.

Written public comments may be sent to the Department of Environmental Protection, Bureau of Land and Water Quality, 17 State House Station, Augusta, Maine 04333-0017.

A public informational meeting for the Emergency Generator Pad project (Phase II) at UNUM's Congress Street facility will be held on September 17, 2004 from 5:00 p.m. to 6 p.m. at UNUM Provident Corporations office, 102 Hutchins Drive, Portland, Maine 04103.

1694551

★ ★ ★

## Legal Advertising

LEGAL ADVERTISEMENT

On Tuesday, September 21, 2004 – 7:00 p.m. at the **Val Halla Banquet Center, 60 Val Halla Road, Cumberland Center, the Cumberland Planning Board will hold the following public hearings.**

**1) Public Hearing:** - Minor Site Plan Review, Construction of a 400 sq. ft. concrete block building for use as a local distribution hub; 197 Blanchard Road, Cumberland Fairgrounds, Tax Assessor Map R-07, Lot 8, Nancy Bozenhard, Patriot Field Services, representative; Time Warner Cable, applicant.

**2) Public Hearing:** Final Plan Review – Major 12 lot subdivision, Orchard Ridge Subdivision, 158 Orchard Rd., Tax Assessor Map R08, Lot 44, 31 acres, RR-2 zone, Great Neck Builders, owner; Scott Decker, P.E., SYTDesign Consultants, representative.

1693461



LEGAL ADVERTISEMENT

**PORTLAND PLANNING BOARD**
The Portland Planning Board will hold a meeting on Tuesday, September 14th, 2004, Room 209, 2nd Floor, City Hall. The agenda includes the following:
**WORKSHOP MEETING - 3:30 P.M.**
I. Drake Equipment Conditions of Approval Appeal; 160 Presumpscot Street; Drake Equipment, Applicant.
II. Sheridan Street Condominiums; 117 Sheridan Street; Laurence Eubank, Applicant.
III. Renovation & Building Addition; 490 Congress Street; Kimball Building, LLC, Applicant.
IV. Appeal; 72-82 Murray Street; Robert Haines, Applicant.
V. Custom House Wharf Contract Zone; Proprietors of Custom House Wharf, Applicant.
Workshop meetings are informational - no vote or final action is taken.
**PUBLIC HEARING MEETING - 7:30 P.M.**
. Oak Ridge 19-lot Subdivision; Vicinity of 60 Plymouth Street, Oak Ridge Development, Applicant.
II. Warehouse Addition; Vicinity of 142 Presumpscot Street; Coastal Equipment, Applicant.
III. Ballpark Drive Subdivision; Vicinity of Washington Avenue; Margaret Haverty, Applicant.
IV. Proposed B-6 Zone implementing upland portions of the Eastern Waterfront Master Plan; City of Portland, Applicant.
Public comments are taken at both workshop and public hearing meetings. Contact the Planning Division at 874-8721 for further information.

## Legal Advertising

LEGAL ADVERTISEMENT

NOTICE OF
PUBLIC HEARING
Pursuant to Title 28 M.R.S.A. Sec. 252 - notice is hereby given that a Public Hearing will be held on Thursday, September 16, 2004, at 7:30 p.m. at the Long Island Town Hall, during a Special Selectmen's Meeting to consider a new malt/vinous liquor license application from Joseph & Joan Merkwaz, d/b/a Chestnut Hill B&B. Public comment will be heard at that time and vote to follow. Prior to the hearing date, written comment may be issued to the Long Island Town Hall, P.O. Box 263, Long Island, ME 04050.

Brenda L. Singo
Town Clerk
1693827



LEGAL ADVERTISEMENT

STATE OF MAINE
PROBATE COURT
CUMBERLAND,SS
LOCATION PORTLAND
DOCKET NO. 2004-0742
In re: Donald J. Nicholas
Petition for Appointment of Co-Guardian of Minor
ORDER FOR SERVICE BY PUBLICATION
This notice is directed to Donald T. Owens, last of Lewiston, County of Androscoggin, State of Maine, whereabouts unknown.
This cause came to be heard on a Motion of the Petitioner, whose address is: Mary and James Nicholas, 217 Coyle Street, Portland, ME 04101 for Service by Publication on Donald T. Owens.
This Motion has been submitted for the following reasons: Petition for Appointment of Guardian of Minor.
Petitioner believes that Donald T. Owens is most likely located at the following address: whereabouts unknown.
Petitioner believes the newspaper in which public notice is most likely to reach Donald T. Owens is: Portland Press Herald, 390 Congress Street, Portland, ME 04101 for the following reasons: last known location.
It is hereby ORDERED that Donald T. Owens appear and defend the cause and serve a response to the Petition upon Petitioner, on or before September 29, 2004, Donald T. Owens is notified that if he/she shall fail to do so, the petition for Guardianship will proceed without objection. His/her response should also be filed with the Cumberland County Probate Court, P.O. Box 15277, Portland, ME 04112.
It is FURTHER ORDERED that this Order be published in a newspaper of general circulation in

LEGAL ADVERTISEMENT

**NOTICE OF PUBLIC SALE**
Pursuant to the Order of Judgment of Foreclosure and Sale entered on June 7, 2004, in District Nine, Division of Southern Cumberland, Docket Number POR-RE-04-27, located in Portland, Maine, in an action brought by GMAC Mortgage Corporation f/k/a GMAC Mortgage Corporation of PA ("GMAC") against Tracie L. Johnson-Clinch and Albert J. Clinch III a/k/a Albert J. Clinch II a/k/a Albert J. Clinch, Defendants, for the foreclosure of the Mortgage recorded in the Cumberland County Registry of Deeds in Book 12563, Page 3, the statutory ninety-day period having elapsed without redemption, notice is hereby given that a public sale of the property described in the said mortgage will be conducted at 10:00 a.m. on Tuesday, the 12th day of October, 2004 at the offices of Drummond & Drummond, LLP, One Monument Way, Portland, Maine. The property is located at 29 Elizabeth Street f/k/a 30 Elizabeth Street, Gorham, Maine. For a more particular description please refer to the Mortgage Deed recorded in the said Registry of Deeds in Book 12563, Page 3.
Terms of Sale: All interested bidders must deposit Five Thousand Dollars ($5,000.00) in cash or certified funds with the auctioneer prior to the commencement of the auction. Five Thousand dollars ($5,000.00) is to be paid to Drummond & Drummond, LLP in cash or certified funds by the high bidder at the time and place of sale, which sum is non-refundable. The high bidder must also sign a purchase and sale agreement with GMAC which arranges for a closing to take place within thirty (30) days of the public sale, at which time the remaining balance of the purchase price, will be paid to GMAC in cash or certified funds. Upon receipt of the full purchase price, GMAC will deliver an executed quitclaim deed without covenant conveying all its right, title and interest in and to the above-described property. The property is being sold **"AS IS, WHERE IS, WITHOUT RECOURSE"** and no representations are made as to the condition of the property by GMAC or its agents. GMAC expressly reserves the right to modify the terms of the sale set forth above and to add additional terms as it so wishes. Other terms and conditions of sale, including any modifications or additions of the terms set forth above will be announced at the time of the public sale. There will be no open house.
Paul E. Peck or another member of the law firm of Drummond & Drummond, LLP, One Monument Way, Portland

LEGAL ADVERTISEMENT

**PUBLIC MEETING NOTICE**
The Small Enterprise Growth Board of Directors monthly business meeting will be held on Monday, September 13, 2004 at 8:30 a.m. at the law offices of Pierce Atwood, One Monument Square, Portland, Maine and members of the public are invited to attend. Items for consideration are (1) Stage I Application: IdealsWork Financial and Blode, Inc. 2) Old Business (3) New Business and such other matters as may come before the Board. For further information contact John Burns, Fund Manager, Small Enterprise Growth Fund, P.O. Box 619, Augusta, ME 04332, 623-3263.

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# LIST OF ATTACHMENTS

| | | |
|---|---|---|
| Section 1 | Development Description | ❖ |
| Section 2 | Title, Right Or Interest | ○ |
| Section 3 | Financial Capacity | ○ |
| Section 4 | Technical Ability | ○ |
| Section 5 | Noise | ○ |
| Section 6 | Visual Quality And Scenic Character | ○ |
| Section 7 | Wildlife And Fisheries | ○ |
| Section 8 | Historic Sites | ○ |
| Section 9 | Unusual Natural Areas | ○ |
| Section 10 | Buffers | ○ |
| Section 11 | Soils | ○ |
| Section 12 | Stormwater Management | ❖ |
| Section 13 | Maintenance Of Common Facilities Or Property | ○ |
| Section 14 | Erosion And Sedimentation Control | ❖ |
| Section 15 | Groundwater | ○ |
| Section 16 | Water Supply | ○ |
| Section 17 | Wastewater Disposal | ○ |
| Section 18 | Solid Waste | ○ |
| Section 19 | Flooding | ○ |
| Section 20 | Blasting | ○ |
| Section 21 | Air Emissions | ○ |
| Section 22 | Odors | ○ |
| Section 23 | Water Vapor | ○ |
| Section 24 | Sunlight | ○ |
| Section 25 | Notices | ○ |

❖ These MeDEP Sections were reviewed and a complete narrative follows this page.

○ These MeDEP Sections were reviewed under the original Site Location of Development Permit and further review is not warranted.

# EMERGENCY GENERATOR PAD FOR UNUM PROVIDENT
# SUPPORTING SECTION NARRATIVES

## Section 2 – Title Right and Interest

The proposed project is sited on property owned by Unum Provident and as demonstrated in prior standing permits.

## Section 3 – Financial Capacity

The emergency generator pad would be funded using capital appropriations of Unum Provident. This facility is a small undertaking for a company the size of Unum Provident.

## Section 4 – Technical Ability

Unum Provident has retained DeLuca Hoffman Associates, Inc. for assistance in the preparation of the site plans and certain site permit applications for this project. Normandeau Associates has been retained as a subconsultant to DeLuca-Hoffman Associates, Inc. to provide wetland mapping and related expertise.

DeLuca Hoffman Associates, Inc. and Normandeau Associates are familiar with the State of Maine Site Location of Development Application process and have historic experience with the Site Location of Development process from prior work on other projects in the State of Maine.

Unum Provident has a full facilities staff to operate and maintain the facility. The company has prior experience from the prior permitting of major projects within the Unum campus.

## Section 5 – Noise

The potential for noise generation will depend upon the equipment selected for the emergency generator pad. The applicant is requesting the permit application contain a provision for a statement to be provided to MeDEP concerning the equipment used for the facility to be assessed for noise by qualified personnel. The MeDEP would be provided 30 days to review the information and determine if additional information or any mitigation would be required.

## Section 6 – Visual Quality and Scenic Character

The emergency generator pad will be accessed from an internal drive within the campus and set back from Congress Street by a natural deciduous buffer with a width of 120. The generator pad will also be in excess of 300 feet from the nearest abutter.

Unum Provident prides itself in its longstanding reputation of maintaining a well-manicured and attractive Congress Street campus for its clients, workforce, and image as one of the major employers in the City of Portland. The addition of the 8,000 square foot emergency generator pad will not alter this established pattern.

**Section 7 – Wildlife and Fisheries:**

This element has been previously reviewed during the prior Site Location of Development Review process.

**Section 8 – Historic Sites**

This element has been previously reviewed during the prior Site Location of Development Review process.

**Section 9 – Unusual Natural Areas**

This element has been previously reviewed during the prior Site Location of Development Review process.

**Section 10 – Buffers**

The generator pad has been sited to minimize the wetland impact. There are proposed wetland fills of about 430 square feet proposed. Using the upland to the extent possible to minimize wetland impact results in a variable but narrow width buffer to the wetlands ranging from zero along the edge of wetland fills to about 15 feet.

Visual buffers are discussed in the paragraph under Section 6.

**Section 11 – Soils**

The soils on this site are mapped by the USDA Medium Intensity Soil Survey as being Scantic. These soils are described as follows:

*"The Scantic series consists of deep, nearly level, poorly drained, medium-textured soils that are underlain by fine-textured material. These soisl formedin marine and lacustrine sediment. They are in old marine estuaries in the eastern and central parts of the country and in depressions around a few inland lakes...*

*A water table is at a depth of 1foot during most of the year, and epth to bedrock is 5 feet or more."*

Prior to construction, the applicant will engage a geotechnical consultant to conduct investigations and recommendations for the foundation systems for the project. It is not anticipated that any required geotechnical stabilization measures would increase the disturbed area for the facility.

A letter describing the wetland delineation in this portion of the campus has been prepared by Normandeau Associates, Inc. and is enclosed.

## Section 12 – Stormwater Management

A detailed Stormwater Management Plan has been prepared and is appended as a separate portion of this application.

## Section 13 –Maintenance of Common Facilities and Property

Unum Provident will maintain generator pad. The Stormwater Management Plan employs subsurface detention facilities and water quality units. As a condition of the approval, Unum Provident will enter into a contract with the vendor or a firm acceptable to MeDEP to provide the first three years maintenance of the stormwater quality units. After that time, the maintenance will be provided by Unum Provident as part of their maintenance of the overall campus system. The underground storage system will have inspection ports to permit periodic observation of the system.

## Section 14 –Erosion and Sediment Control

A detailed Erosion/Sediment Control Plan has been prepared and is appended as a separate portion of this application.

## Section 15 –Groundwater

The site is not on a sand and gravel aquifer as shown by Figure 8 in Section 1. The proposed facility will not withdraw or inject groundwater. The detention facility will be lined to prevent infiltration.

## Section 16 –Water Supply

Water supply will not be required at the concrete pad.

## Section 17 – Wastewater Disposal

No additional wastewater is proposed as part of this project.

## Section 18 –Solid Wastes

Solids wastes from the operation of the facility are anticipated to be minimal and will be handled with other wastes on the campus. Wood wastes from clearing will be chipped and used for erosion control or transported to a biomass facility.

During construction, the contractor will be responsible for identifying the disposition of all construction waste at a licensed facility.

## Section 19 –Flooding

The project is not in a mapped flood plain as shown on Figure 7 of Section 1. Stormwater Management is proposed as part of the project as outlined in Section 12.

## Section 20 – Blasting

Blasting may be required for the project based upon work on other nearby areas of the campus. However, provisions have been made in the event that blasting is required, for removal of oversized boulders, or if rock is encountered. Boulders over 3 c.y. will be measured and paid for as rock if encountered during construction. Blasted rock or boulders may be broken into a well-graded mixture under 12" in size and used as follows:

- Removed from the site.
- Processed and used as rip rap.

The measures of paragraphs 20.1 and 20.2 of this section will become part of the contract documents for construction to address the proper method for blasting encountered during construction.

### Preblast Survey

The Owner will contract with general contractors for the project. The Owner may elect a design build firm or to bid the project to General Contractors with Division 2 work included in the building bid. The General Contractor will be required to prepare a blasting plan and preblast survey prior to any rock removal. A written report of the preblast survey and blasting plan will be provided to the Owner by the Contractor and will be available for review by MeDEP. The scope of the blasting plan and preblast survey will be required to conform to the following specifications and the requirements of the Blasting Section:

- All structures within a minimum distance of 500 feet from any blasting activity shall be surveyed as part of the preblast survey. The extent beyond the 500-foot minimum shall be determined by the Contractor, their blasting subcontractor, and their insurance companies.

- A blasting plan shall be prepared which addresses:

  - Airblast limits
  - Ground vibrations
  - Maximum peak particle velocity

- The blasting plan shall meet criteria established in Chapter 3 (Control of Adverse Effects) in the Blasting Guidance Manual of the United States Department of the Interior Office of Surface Mining Reclamation and Enforcement.

- Provisions and measures to monitor and assure compliance with the blasting plan.

### Blasting

Blasting shall be performed only after approval has been given by the Owner for such operations and must comply with the following provisions:

A. The Contractor or any subcontractor shall use sufficient stemming, matting or natural *protective cover to prevent flyrock from leaving property owned or under control of the owner or operator or from entering protected natural resources or natural buffer strips. Crushed rock or other suitable material must be used for stemming when available; native gravel, drill cuttings or other material may be used for stemming only if no other suitable material is available.*

B. *The maximum allowable airblast at any inhabited building not owned or controlled by the developer may not exceed 129 decibels peak when measured by an instrument having a flat response (+ or – 3 decibels) over the range of 5 to 200 hertz.*

C. *The maximum allowable airblast at an uninhabited building not owned or controlled by the developer may not exceed 140 decibels peak when measured by an instrument having a flat response (+ or – 3 decibels) over the range of 5 to 200 hertz.*

D. *Monitoring of airblast levels is required in all cases for which a preblast survey is required by paragraph F. The Contractor may file an MeDEP Permit Modification requesting the MeDEP waive the monitoring requirement if the Contractor or subcontractor secures the permission of affected property owners to increase allowable airblast levels on their property and the Department determines that no protected natural resource will be adversely affected by the increased airblast levels. The cost to prepare the permit modification and the effect of project delay while MeDEP reviews the request shall be borne solely by the Contractor or his subcontractor.*

E. *If a blast is to be initiated by detonating cord, the detonating cord must be covered by crushed rock or other suitable cover to reduce noise and concussion effects.*

F. *A preblast survey is required and must extend a minimum radius of 2,000 feet from the blast site. The preblast survey must document any preexisting damage to structures and buildings and any other physical features within the survey radius that could reasonably be affected by blasting. Assessment of features such as pipes, cables, transmission lines and wells and other water supply systems must be limited to surface conditions and other readily available data, such as well yield and water quality. The preblast survey must be conducted prior to the initiation of blasting at the operation. The Contractor or subcontractor shall retain a copy of all preblast surveys for at least one year from the date of the last blast on the development site.*

   *(1) The Contractor or the subcontractor is not required to conduct a preblast survey on properties for which the owner or operator documents the rejection of an offer by registered letter, return receipt requested, to conduct a preblast survey. Any person owning a building within a preblast survey radius may voluntarily waive the right to a survey.*

G. *Blasting may not occur in the period between sundown and sunrise the following day or in the period 7:00 p.m. and 7:00 a.m., whichever is greater. Routine production blasting is not allowed in the daytime on Sunday. Detonation of misfires may occur outside of these times but must be reported to the Department within 5 business days of the misfire detonation. Blasting may not occur more frequently than 4 times per day. Underground production*

*blasting may be exempted from these requirements, provided that a waiver is granted by the Department.*

H. *Sound from blasting may not exceed the following limits at any protected location:*

| *Number of Blasts Per Day* | *Sound Level Limit* |
|---|---|
| *1* | *129 dbl* |
| *2* | *126 dbl* |
| *3* | *124 dbl* |
| *4* | *123 dbl* |

I. *The maximum peak particle velocity at inhabitable structures not owned or controlled by the developer may not exceed the levels established in Table 1 in paragraph J and the graph published by the United States Department of the Interior in "Bureau of Mines Report of Investigations 8507," Appendix B, Figure B-1. The Contractor or subcontractor may apply for a MeDEP Project Modification to request a variance to allow ground vibration levels greater than 2 inches per second on undeveloped property not owned or controlled by the applicant if the Department determines that no protected natural resource, unusual natural area or historic site will be adversely affected by the increased ground vibration levels. If inhabitable structures are constructed on the property after approval of the MeDEP and prior to completion of blasting, the Contractor immediately must notify the Department and modify blasting procedures to remain in compliance with the standards of this subsection. The cost to prepare the permit modification and the effect of project delay while MeDEP reviews the request shall be borne solely by the Contractor or his subcontractor.*

J. *Table 1 of this paragraph or the graph published by the United States Department of the Interior in "Bureau of Mines Report of Investigations 8507", Appendix B. Figure B-1 must be used to evaluate ground vibration effects for those blasts for which a preblast survey is required.*

(1) *Either Table 1 of this paragraph or graph published by the United States Department of the Interior in "Bureau of Mines report of Investigations 8507", Appendix B, Figure B-1 may be used to evaluate ground vibration when blasting is to be monitored by seismic instrumentation.*

(2) *Blasting measured in accordance with Table 1 of this paragraph must be conducted so that the peak particle velocity of any one of the 3 mutually perpendicular components of motion does not exceed the ground vibration limits at the distances specified in Table 1 of this paragraph.*

(3) *Seismic instruments that monitor blasting in accordance with Table 1 of this paragraph must have the instrument's transducer firmly coupled to the ground.*

(4) *An owner or operator using Table 1 of this paragraph must use the scaled-distance equation, W=(D/Ds)2, to determine the allowable charge weight of explosives to be detonated in any 8 millisecond or greater delay period without seismic monitoring, where W is equal to the maximum weight of explosives, in pounds, and D and Ds are*

*defined as in Table 1 of this paragraph. The Contractor may apply for a Permit Modification to MeDEP to authorize the use of a modified scaled-distance factor for production blasting if the contractor can demonstrate to a 95% confidence level, based upon records of seismographic monitoring at the specific site of the mining activity covered by the permit, that use of the modified scaled-distance factor will not cause the ground vibration to exceed the maximum allowable peak particle velocities of Table 1 of this paragraph. The cost to prepare the permit modification and the effect of project delay while MeDEP reviews the request shall be borne solely by the Contractor or his subcontractor.*

*(5) Blasting monitored in accordance with the graph published by the United States Department of the Interior in "Bureau of Mines Report of Investigations 8507", Appendix B, Figure B-1 must be conducted so that the continuously variable particle velocity criteria are not exceeded.*

*The Contractor may apply for a Permit Modification to MeDEP for a variance of the ground vibration monitoring requirement prior to conducting blasting at the development site if the Contractor agrees to design all blasts so that the weight of explosives per 8 millisecond or greater delay does not exceed that determined by the equation $W=(D/D_s)^2$, where W is the maximum allowable weight of explosives per delay of 8 milliseconds or greater, D is the shortest distance between any area to be blasted and any inhabitable structure not owned or controlled by the developer, and Ds equals 70 ft./lb.$^{1/2}$. As a condition of the variance, the Department may require submission of records certified as accurate by the blaster and may require the owner or operator to document compliance with the conditions of this paragraph. The cost to prepare the permit modification and the effect of project delay while MeDEP reviews the request shall be borne solely by the Contractor or his subcontractor.*

*The following is Table 1.*

| ***Distance Versus Peak Particle Velocity Method*** | | |
|---|---|---|
| ***Distance (D) from the blast area*** | ***Maximum allowable peak particle velocity (Vmax) for ground vibration (in./sec.)*** | ***Scaled-distance factor (Ds) to be applied without seismic monitoring*** |
| *0 to 300* | *1.25* | *50* |
| *301-5000* | *1.00* | *55* |
| *Greater than 5000* | *0.75* | *65* |

*K. A record of each blast, including seismographic data, must be kept for at least one year from the date of the last blast, must be available for inspection at the development or at the offices of the owner or operator if the development has been closed, completed or abandoned before the one-year limit has passed, and must contain at a minimum the following data:*

*(1) Name of blasting company or blasting contractor;*

*(2) Location, date and time of blast;*

*(3) Name, signature and social security number of blaster;*

*(4) Type of material blasted;*

*(5) Number and spacing of holes and depth of burden or stemming;*

*(6) Diameter and depth of holes;*

*(7) Type of explosives used;*

*(8) Total amount of explosives used;*

*(9) Maximum amount of explosives used per delay period of 8 milliseconds or greater;*

*(10) Maximum number of holes per delay period of 8 milliseconds or greater;*

*(11) Method of firing and type of circuit;*

*(12) Direction and distance in feet to the nearest dwelling, public building, school, church or commercial or institutional building neither owned nor controller by the developer;*

*(13) Weather conditions, including such factors as wind direction and cloud cover;*

*(14) Height or length of stemming;*

*(15) Amount of mats or other protection used;*

*(16) Type of detonators used and delay periods used;*

*(17) The exact location of each seismograph and the distance of each seismograph from the blast;*

*(18) Seismographic readings;*

*(19) Name and signature of the person operating each seismograph; and*

*(20) Names of the person and the firm analyzing the seismographic data.*

*L. All field seismographs must record the full analog wave form of each of the 3 mutually perpendicular components of motion in terms of particle velocity. All seismographs must be capable of sensor check and must be calibrated according to the manufacturer's recommendations.*

**Section 21 –Air Emissions**

Unum Provident will seek separate air emissions permits, if required, for the emergency generator pad.

**Section 22 – Odors**

No nuisance odors are anticipated from the emergency generator pad.

**Section 23 –Water Vapor**

The scale of the project is insufficient to result in significant water vapors.

## Section 24 –Sunlight

The facility is located in an area within the campus where shadows onto abutting properties are not possible.

## Section 25 –Notices

It is the understanding of the Applicant and DeLuca-Hoffman Associates, Inc. that public notices are not required for a Permit Modification or Amendment.

# SECTION 1

# DEVELOPMENT DESCRIPTION

## 1.1 Introduction

Unum Provident is proposing the addition of an emergency generator pad at the Congress Street Campus in Portland, Maine. This facility may involve phased construction and staged improvements intended to increase the reliability of the electrical power supply for the Congress Street Campus. This application for a modification for the facility is intended to address the items attendant with the Site Location of Development and Natural Resource Regulations and Permits of the existing facility. In order to provide flexibility for the facility over time, this application seeks approval for the upper limit of potential site and infrastructure needs for the emergency facility. Initial construction may actually result in lesser impacts and infrastructure requirements.

The application seeks approval to construct a concrete pad with dimensions of 80 x 100 feet (8,000 square feet). No building is proposed at this location. The Emergency Generator Pad needs to be sited close to existing infrastructure near the mechanical feeds to H.O. #2.

The facility will be used for emergency generators in the event of power outages.

It is noted that the activity in the facility should not affect this permit noting:

- Any air emissions licensing will be permitted separately; and
- The applicant agrees to the stipulation to submit supplemental information prior to the installation of equipment which could be considered noise pursuant to the requirements of MeDEP Air Quality Regulations 06.096.

The proposed facility will be located in the portion of the campus bounded to the south by Congress Street, to the west by the campus entrance drive from Congress Street, to the north by an internal driveway, and to the east by the Unum Daycare and wetlands. This area is currently forested.

The area is characterized as an upland peninsula surrounded by wetlands. The proposed activity will result in the disturbance of approximately 0.75 acres of land for the concrete pad, drive, construction of stormwater management facilities, and related site work.

## 1.2 Existing Site Conditions

The Unum Provident Campus is a large facility which holds an existing Site Location of Development Permit. This modification focuses on the immediate area where the emergency generator pad facility would be constructed. The area as described in the introduction is about 2.80 acres with the "project area" (disturbed area) being about 0.75 acres.

Topography in the area is mild with the upland peninsula gently rising above the wetlands which surround three sides. Elevations in this area range from 86 to 74 with the elevations in the area of the proposed facility ranging from 86 to 76. The site conditions are depicted on Drawing C-1 of the plan set.

Drainage flows from the upland area to the adjacent wetlands and continues through the wetlands to an unnamed tributary of the Stroudwater River. The drainage is tributary to the Stroudwater River and the Fore River. These receiving waters are not listed as rivers most at risk from development, sensitive, threatened regions, or watershed.

Soils on the site are mapped on the USDA SCS Map as being Scantic silt loam. Figures 8, 9, and 10 appended to this section provide the Medium Intensity Soils, Sand and Gravel Aquifer, and Surficial Geology for the site. Bedrock is known to be relatively shallow in portions of the campus.

The site is not in a 100-year floodplain based upon the Flood Map appended to this section as Figure 7.

## 1.3 Natural Resources

As stated, the site of the proposed project is a peninsula surrounded by wetlands. The wetlands in the project area were flagged and identified by Jennifer West of Normandeau Associates on December 12, 2003. Approximately 450± square feet of wetlands at the ditch of the entrance to the site will be impacted by the proposed emergency facility.

## 1.4 Proposed Project

The proposed project is generally described in the introduction as a 80 by 100 foot emergency generator pad. Access to the site will be from the internal driveway just north of the proposed facility.

The proposed facility and infrastructure connection locations are shown on Drawings C-2, C-3, and C-4 of the accompanying site plan.

## 1.5 Critical Areas

The critical areas are the adjacent wetlands proposed to remain undisturbed by construction of the project.

## 1.6 Construction Schedule

The construction of the facility may commence in the Summer of 2004. The Erosion Control Plan prepared for this submission includes winter provisions, if necessary.

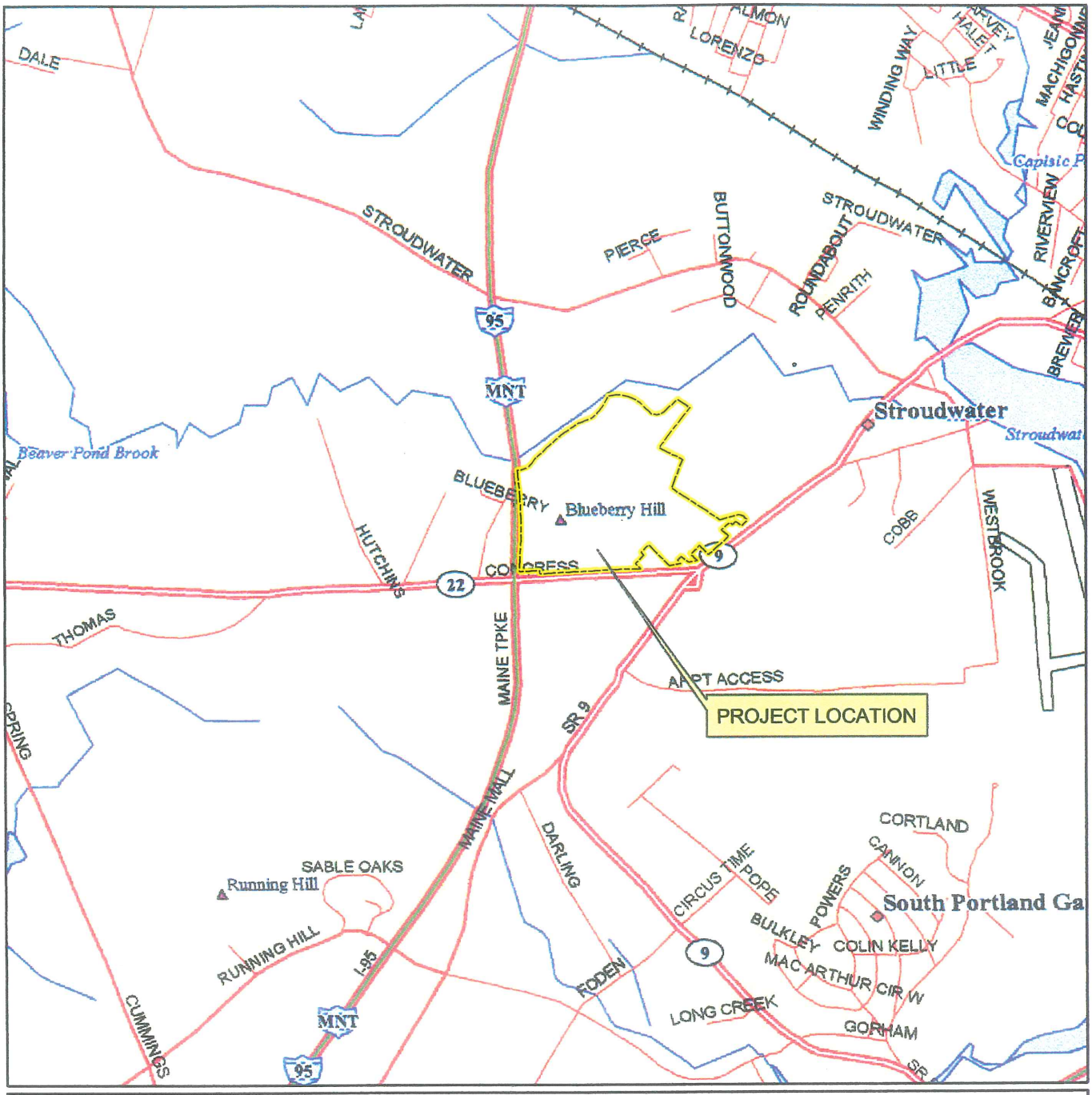
## 1.7 Figures, Plates and Drawings

Figures showing the proposed new school and site are appended to this section and include:

| Figure No. | Title |
|---|---|
| 1 | DeLorme Location Map |
| 2 | USGS Topographic Map |
| 3 | Property Tax Map |
| 4 | Zoning Map |
| 5 | Aerial Photograph |
| 7 | FEMA Flood Map |
| 8 | USDA SCS Soils Map |
| 9 | MGS Sand and Gravel Aquifer Map |
| 10 | MGS Surficial Geology Map |
| 11 | National Wetland Inventory Map |

Drawings provided in support of the application include:

| Drawing No. | Description |
|---|---|
| C-1 | Existing Conditions |
| C-2 | Site Layout Plan |
| C-3 | Grading, Drainage, and Erosion Control Plan |
| C-4 | Utility Plan |
| C-5 | Miscellaneous Site Details |
| C-6 | Miscellaneous Site Details |

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# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# DeLORME LOCATION MAP

SOURCE: DeLORME MAP EXPERT

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

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| CHECKED: | DDA |
| DATE: | FEB. 2004 |
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FIGURE

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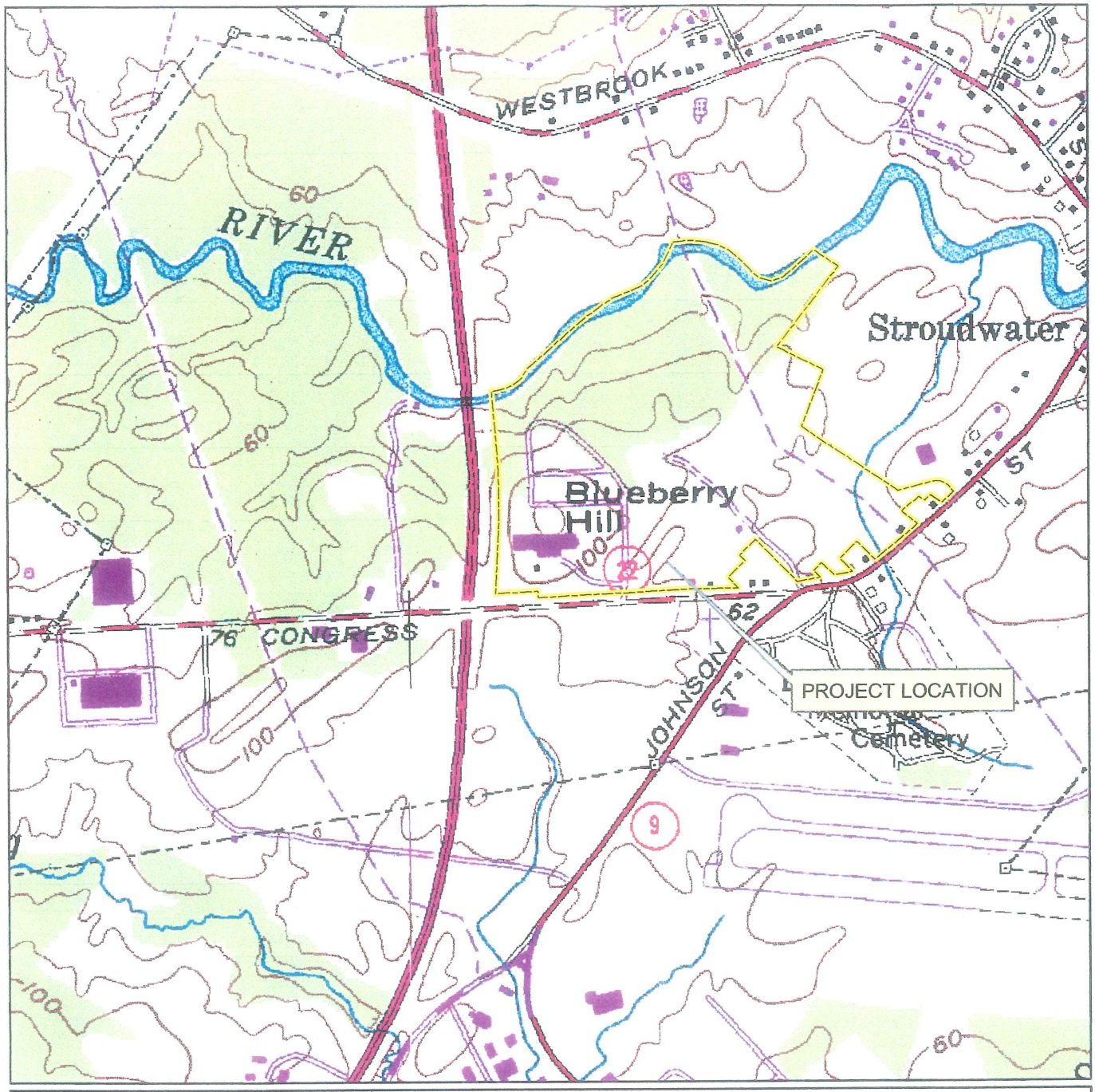


N

# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# USGS TOPOGRAPHIC MAP

SOURCE: MAINE OFFICE OF GIS

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

| | |
|---|---|
| DRAWN: | RJK |
| CHECKED: | DDA |
| DATE: | FEB. 2004 |
| FILENAME: | |
| SCALE: | 1 inch equals 1,000 feet |

FIGURE

2


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# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# PROPERTY TAX MAP

SOURCE: CITY OF PORTLAND GIS DEPARTMENT

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

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| CHECKED: | DDA |
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FIGURE

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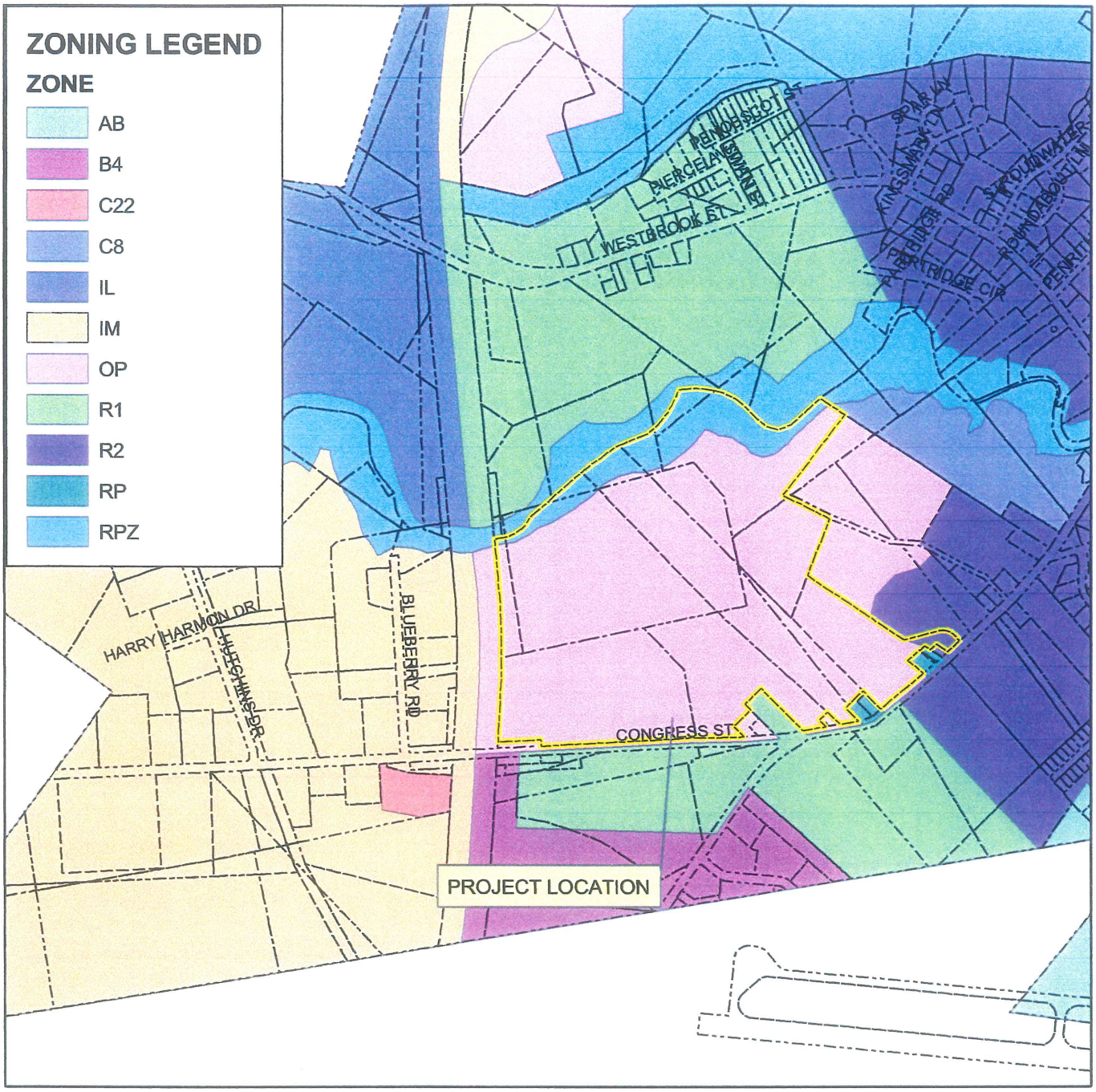


N

# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# ZONING MAP

SOURCE: CITY OF PORTLAND GIS DEPARTMENT

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

| | |
|---|---|
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| CHECKED: | DDA |
| DATE: | FEB. 2004 |
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| SCALE: | 1 inch equals 1,000 feet |

FIGURE

4


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# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# AERIAL PHOTOGRAPH

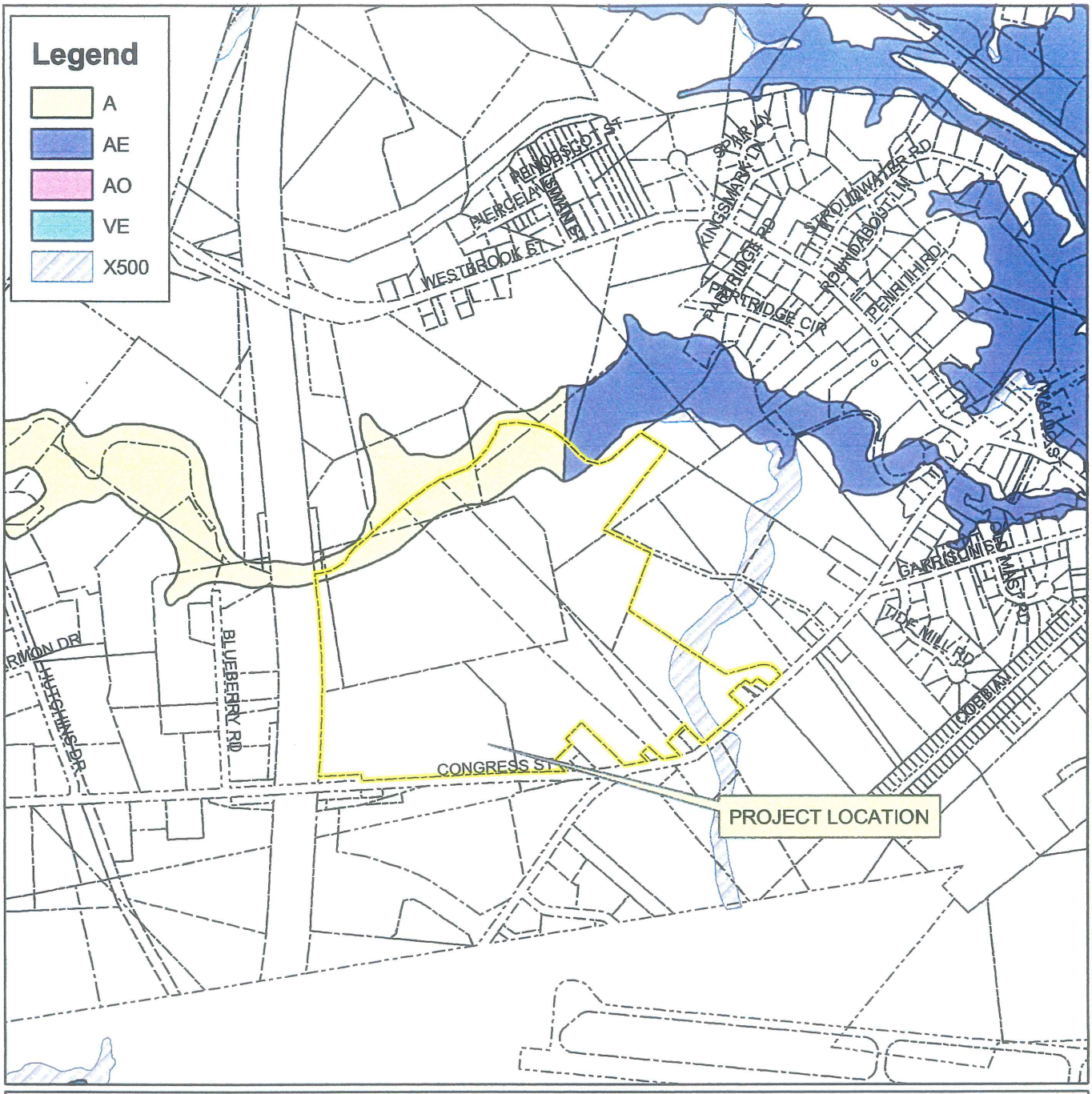
SOURCE: MAINE OFFICE OF GIS

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

| | |
|---|---|
| DRAWN: | RJK |
| CHECKED: | DDA |
| DATE: | FEB. 2004 |
| FILENAME: | |
| SCALE: | 1 inch equals 1,000 feet |

FIGURE

5




N

# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# FLOOD MAP

SOURCE: MAINE OFFICE OF GIS

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
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| CHECKED: | DDA |
| DATE: | FEB. 2004 |
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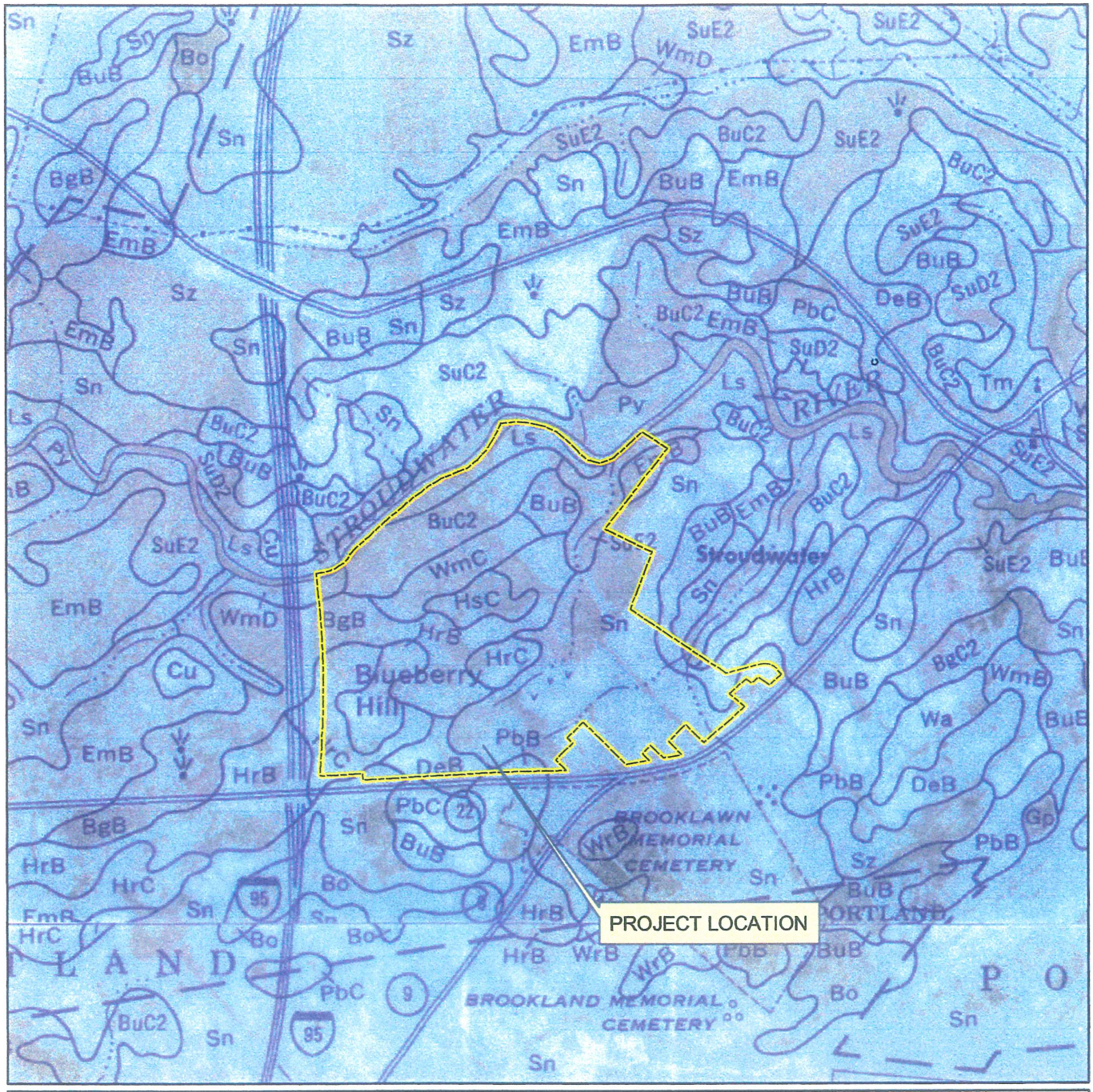
| SCALE: | 1 inch equals 1,000 feet |

FIGURE

7




N

# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# SOILS MAP

SOURCE: MAINE OFFICE OF GIS

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| CHECKED: | DDA |
| DATE: | FEB. 2004 |
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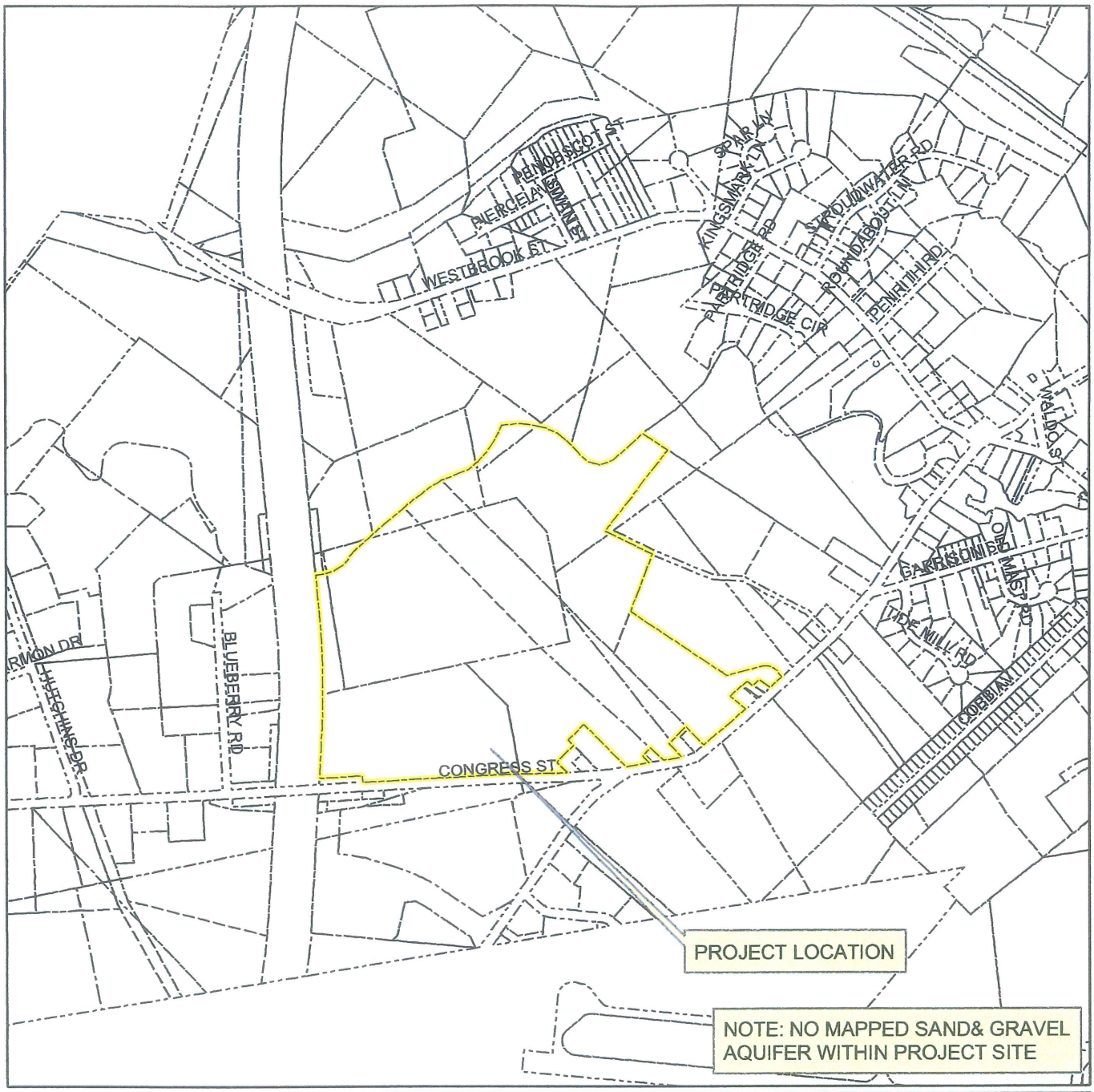
| SCALE: | 1 inch equals 1,000 feet |

FIGURE

8




N

# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# SAND & GRAVEL AQUIFER MAP

SOURCE: MAINE OFFICE OF GIS

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| CHECKED: | DDA |
| DATE: | FEB. 2004 |
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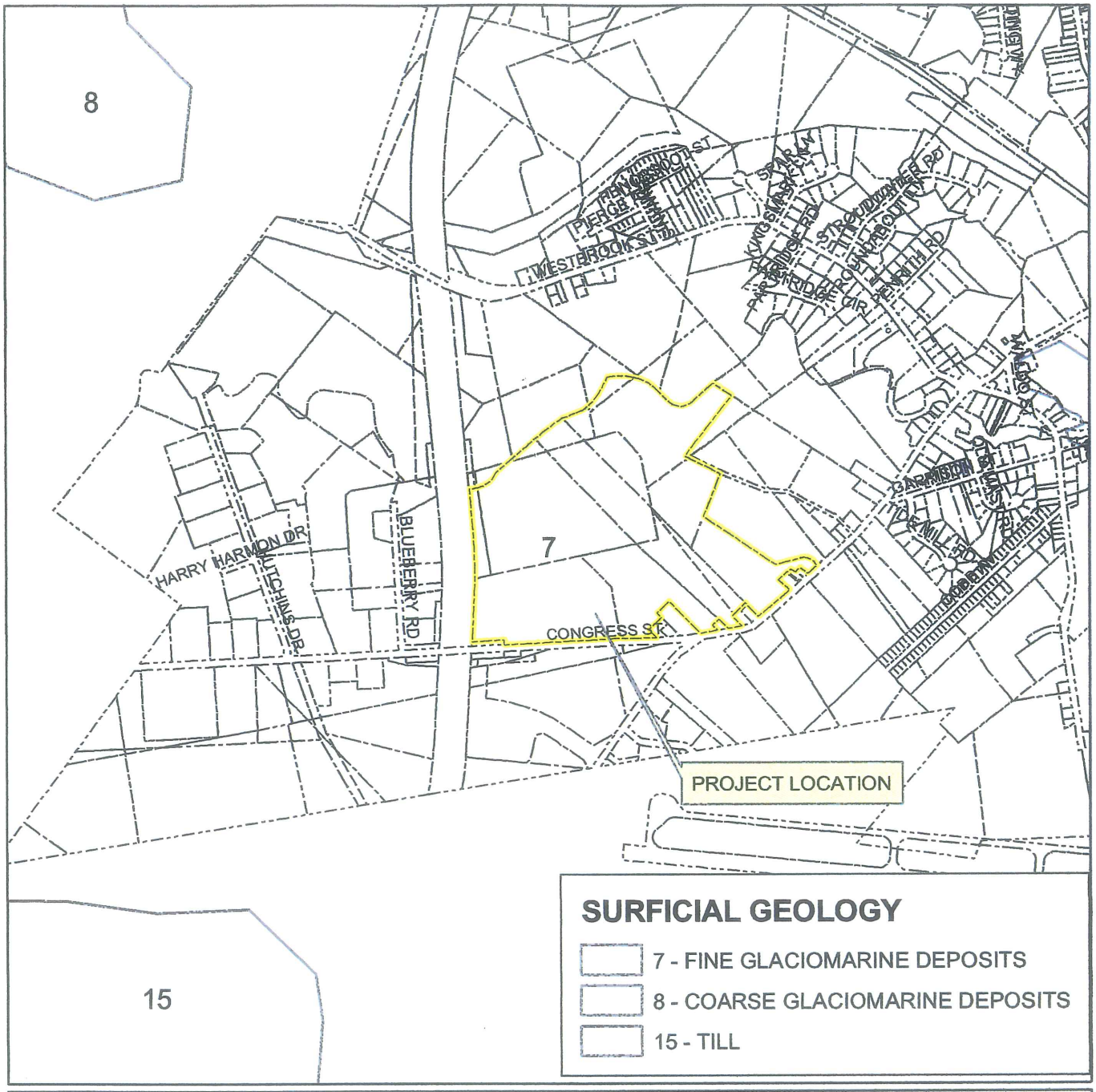
| SCALE: | 1 inch equals 1,000 feet |

FIGURE

9




N

# EMERGENCY GENERATOR PAD
# UNUM PROVIDENT
# SURFICIAL GEOLOGY MAP

SOURCE: MAINE OFFICE OF GIS

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| | |
|---|---|
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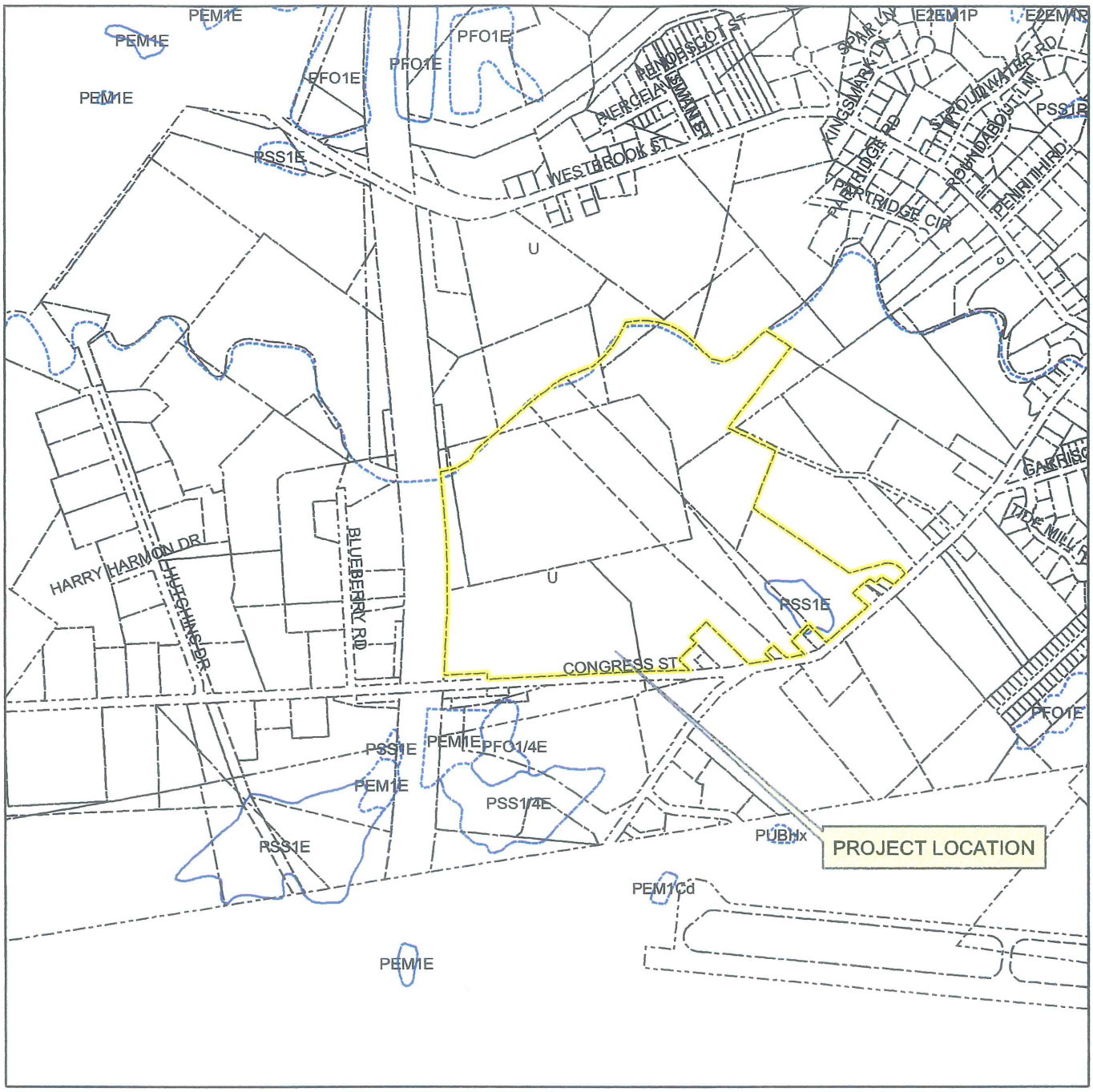
| DATE: | FEB. 2004 |
| FILENAME: | G:\2445-UNUM\FIGURES\2445-SURFGEO-FIG10.mxd |
| SCALE: | 1 inch equals 1,333 feet |

FIGURE

10




N

# ENERGY SUPPORT FACILITY
# UNUM PROVIDENT
# NATIONAL WETLANDS INVENTORY MAP

SOURCE: MAINE OFFICE OF GIS

DeLuca-Hoffman Associates, Inc.
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| CHECKED: | DDA |
| DATE: | FEB. 2004 |
| FILENAME: | G:\2445-UNUM\FIGURES\2445-NWI-FIG11.mxd |
| SCALE: | 1 inch equals 1,000 feet |

FIGURE

11

# SECTION 12

# STORMWATER MANAGEMENT REPORT

# UNUM PROVIDENT: EMERGENCY GENERATOR PAD
# CONGRESS STREET – PORTLAND, MAINE

**Prepared for:**

**Unum Provident**
**2211 Congress Street**
**Portland, Maine 04101**

**Prepared by:**

**DeLuca-Hoffman Associates, Inc.**
**778 Main Street, Suite 8**
**South Portland, Maine 04106**

**July 2004**

## TABLE OF CONTENTS



**Cross References**

Section 11 – Soils
Section 19 – Flooding
Section 14 – Erosion and Sediment Control

**Plan References**

DeLuca-Hoffman Associates, Inc. Drawings C-1 to C-6 for the 2004 Emergency Generator Pad

## 12.0 Introduction

DeLuca-Hoffman Associates, Inc. has been retained by Unum Provident to assist in the site design and site permitting of a proposed 8,000 square foot Emergency Generator Pad at the Unum Provident Congress Street campus in Portland, Maine.

Unum Provident is proposing the addition of an emergency generator pad at the Congress Street Campus in Portland, Maine. This application for a modification for the generator pad is intended to address the items attendant with the Site Location of Development and Natural Resource Regulations and Permits of the existing campus. In order to provide flexibility for the generator pad over time, this application seeks approval for the upper limit of potential site and infrastructure needs for the emergency generator pad. Initial construction may actually result in lesser impacts and infrastructure requirements.

The application seeks approval to construct an emergency generator pad with nominal dimensions of 80 by 100 feet (8,000 square feet). The Emergency Generator Pad needs to be sited close to existing infrastructure near the mechanical feeds to H.O. #2.

It is noted that the activity at the generator pad should not affect this permit noting:

- Any air emissions licensing will be permitted separately; and
- The applicant agrees to the stipulation to submit supplemental information prior to the installation of equipment which could be considered noise pursuant to the requirements of MeDEP Air Quality Regulations 06.096.

The proposed generator pad will be located in the portion of the campus bounded to the south by Congress Street, to the west by the campus entrance drive from Congress Street, to the north by an internal driveway, and to the east by the Unum Daycare and wetlands. This area is currently forested.

The area is characterized as an upland peninsula surrounded by wetlands. The proposed activity will result in the disturbance of approximately 0.75 acres of land for the concrete pad, drive, construction of stormwater management facilities, and related site work.

The proposed site contains wetland areas but no streams. The project proposes to fill approximately 450± square feet of the wetlands located at the ditch at the proposed entrance to the site.

This narrative contains the Stormwater Management systems designed and required for this project.

The project is not in a lake watershed or a watershed most at risk from development.

## 12.1 Existing Site Conditions

The Unum Provident Campus is a large facility which holds an existing Site Location of Development Permit. This modification focuses on the immediate area where the

emergency pad would be constructed. The area as described in the introduction is about 2.80 acres with the "project area" (disturbed area) being about 0.75 acres.

Topography in the area is mild with the upland peninsula gently rising above the wetlands which surround three sides. Elevations in this area range from 86 to 74 with the elevations in the area of the proposed generator pad ranging from 86 to 76. The site conditions are depicted on Drawing C-1 of the plan set.

Drainage flows from the upland area to the adjacent wetlands and continues through the wetlands to an unnamed tributary of the Stroudwater River. The drainage is tributary to the Stroudwater River and the Fore River. These receiving waters are not listed as rivers most at risk from development, sensitive, threatened regions, or watershed.

Soils on the site are mapped on the USDA SCS Map as being Scantic silt loam. Figures 8, 9, and 10 appended to this section provide the Medium Intensity Soils, Sand and Gravel Aquifer, and Surficial Geology for the site. Bedrock is known to be relatively shallow in portions of the campus.

The site is not in a 100-year floodplain based upon the Flood Map appended to this section as Figure 7.

The site is not located in a mapped 100-year floodplain based upon the FEMA mapping and depicted on Figure 7.

The project is not in a lake watershed or a watershed most at risk from development.

DeLuca-Hoffman Associates, Inc. is not aware of any areas of existing erosion on the site or blockage which restricts existing drainage from entering the site from natural upstream areas.

## 12.2 Existing and Proposed Drainage Features

The existing drainage systems on the site are principally sheet flow from the upland knoll to the wetlands which surround three sides of the proposed site. Runoff is attenuated by storage in the wetlands before entering a culvert under Congress Street and leaving the site. Drainage ultimately is tributary to the Stroudwater and Fore Rivers.

The proposed drainage system will include formal inlets and buried piping to direct the concrete pad, gravel area, and most of the access drive to water quality units and a proposed subsurface detention facility on the southerly side of the site. Flows will be released through an outlet control structure and a riprap apron located at the southeast corner of the proposed site to disperse the flow back to the wetlands.

## 12.3 Master Plan for Stormwater Management

The stormwater management evaluations for the proposed Emergency Generator Pad considers the drainage currently emanating from the upland knoll and entering the wetlands in the small portion of the site where this generator pad is planned.

Comprehensive watershed analysis for the campus has previously evaluated the overall campus. For this project, the following is noted:

- Locations for Stormwater Discharges

  The stormwater management plan for this project uses the traditional approach of mitigating peak discharges using attenuation in a basin or reducing the watershed sizes to reduce the postdevelopment runoff rates to predevelopment levels before exiting the site.

- Alternatives for Detention

  The alternatives for detention considered include:

  - On-site open water detention
  - On-site underground storage
  - Infiltration

The underground detention system was selected due to the limited upland area of this portion of the site and the need to minimize wetland fill and because the soils are not conducive to infiltration. The disadvantage of the buried system is that it will cost substantially more than an open system and observation of performance is more difficult.

## 12.4 Alternatives for Water Quality Treatment

Water quality treatment can be afforded by natural buffers, treatment swales, wet ponds, and water quality units.

**Buffers:** The use of natural buffers is considered a practicable alternative sheet slow but not for wetland areas receiving concentrated flows emanating from pavement and rooftops at this site.

**Wet Retention Pond:** The use of a wet pond for treatment as part of the detention system was found to be impracticable for treatment of pavement and rooftop areas at this site.

**Water Quality Units:** The water quality units can achieve total suspended solids removal as required to meet the TSS standard although there performance to address the non-point runoff issues attendant with nutrients, metals, or biologic demand is less than other systems. The advantage of these units is the limited space requirements and these systems were selected for this reason.

## 12.5 References

The following reference sources were reviewed during preparation of the stormwater analysis:

1. Technical Release Number 20 – Computer Program for Project Formulation – Hydrology, USDA Soil Conservation Service, May 1983

2. Section 4 – Hydrology, USDA Soil Conservation Service, March 1985
3. Technical Release Number 55 – Urban Hydrology for Small Watersheds, USDA Soil Conservation Service, June 1986
4. Civil Engineering Reference Manual, Lindeburg, 1995
5. HydroCAD Technical Reference Manual, Applied Micro-Computer System, 2001
6. Water Supply and Pollution Control, Clark, Viessman, Hammer, 1971
7. Maine Erosion and Sedimentation Control Handbook for Construction: Best Management Practices, MeDEP, March 1991
8. Stormwater Management, Best Management Practices, MeDEP, 1996
9. Federal Highway Administration, Hydraulic Design Services No. 5 – Hydraulic Design of Culverts

The following sources were used for preparation of the stormwater quality analysis:

1. Reducing the Impacts of Stormwater Runoff from New Development – New York State Department of Environmental Conservation, April 1993.
2. Stormwater Management, Best Management Practices, MeDEP, 1996.
3. EPA – Urban Targeting and BMP Selection – Terrene Institute, November 1990.
4. Urbanization and Water Quality – Terrene Institute, March 1994.
5. A Current Assessment of Urban Best Management Practices, Techniques for Reducing Non-point Source Pollution in the Coastal Zone, U.S.E.P.A. Office of Watersheds, March 1992.
6. MeDEP Chapter 500, Stormwater Management Rules.
7. MeDEP Phosphorus Manual, Phosphorus in Lake Watersheds, Revised September 1992.

Computer programs used to assist in the various components of this analysis include:

1. HydroCAD Stormwater Modeling System, version 6.0, Applied Microcomputer Systems – used for modeling watersheds for pre and postdevelopment conditions;
2. FlowMaster 1, version 2.06, Haested Methods, Inc., 1990 – used to determine flow depths in open channel; and
3. Microsoft Excel, version 7.0, 1997, Microsoft Corporation – used for spreadsheet computations.

Data resources used to obtain the hydrologic input data for the stormwater model are identified later in this report.

## 12.6 Overview of Stormwater Runoff Modeling

The stormwater analysis evaluates seven elements of the project as follows:

1. Analysis of predevelopment and postdevelopment stormwater runoff rates;
2. Review of the potential impacts of the proposed site redevelopment and subsequent modification to site discharge rates and locations.
3. Evaluation of the requirements for stormwater management.
4. Evaluation of storm drainage conveyance requirements for access driveways, parking areas, and other improvements to direct the runoff to the proposed basin.
5. Water quality measures requirements.
6. Basin design and lining requirements; and
7. Inlet capacity of various catch basins and inlets.

## 12.7 Methods of Analysis – Stormwater Quantity

The hydrologic analyses for predevelopment and postdevelopment conditions have been conducted based upon the methodology contained in the USDA Soil Conservation Service's Technical Releases No. 20 and 55 (SCS TR-20 and TR-55) as modified for special site conditions. For Cumberland County, Maine, a 24-hour SCS Type III storm distribution was used for the analysis using the following storm frequencies and rainfall amounts:

| Storm Event | 24-Hour Rainfall |
|---|---|
| 2-Year Storm | 3.0 Inches |
| 10-Year Storm | 4.7 Inches |
| 25-Year Storm | 5.5 Inches |

The HydroCAD computer program was used in the analysis. This program determines the critical points of the project watershed and uses SCS TR-20 methodology for evaluation of the anticipated conditions at these points. Drainage areas are defined with runoff curve numbers, times of concentration, and travel time data based on methods outlined in the USDA TR-55 manual. To assess storage and kinematic effects of runoff, the model uses reservoirs and pipes to imitate actual conditions. Specific hydrologic characteristics including travel times, storage capacity, and the effects of hydraulic head are considered for analysis with this program.

To model any watershed, the drainage system is represented by a system network consisting of four basic components:

- **Subcatchment:** A relative homogenous area of land that drains into a single reach or pond. Each subcatchment generates a runoff hydrograph.
- **Reach:** A uniform stream, channel, or pipe which conveys water from one point to another reach or pond. The outflow of each reach is determined by a hydrograph routing calculation.

- **Pond:** A pond, swamp, dam, or other impoundment which fills with water from one or more sources and empties in a manner determined by a weir, culvert or other device (s) at its outlet. A pond may empty into a reach or into another pond. The outflow of each pond is also determined by a hydrograph routing calculation.
- **Link:** A multi-purpose mechanism for introducing a hydrograph from outside the diagram, by either manual entry, file import, or linkage to another diagram. A link also allows the diversion and/or scaling of hydrographs.

After identifying each of the components, the system may be represented by a routing diagram such as shown in the schematics and computations contained in Attachment A.

To calculate the outflow for each structure, HydroCAD automatically performs these steps:

1. If there is more than one inflow, the inflows are summed together to produce a single hydrograph. If a pipe is being re-sized, its diameter will be calculated to handle the peak inflow.
2. The inflow is routed through the structure using the description and method previously specified. For subcatchments, the specified storm type and rainfall are used.
3. For a reach, the peak depth, peak velocity, contact time, etc. are calculated.
4. For a pond, the peak elevation, peak storage, etc. are calculated.
5. Any warning messages are displayed.
6. For the inflow and outflow, the peak flow and time of peak are calculated by interpolating between the three highest points.
7. The total volume of inflow and outflow are calculated.
8. The results are stored in a database for subsequent calculations or examined at anytime.

The process is automatically repeated for each structure until the design point is reached. HydroCAD is a hydrograph routing model. It is designed specifically to handle time varying flows, as required for pond design and other volume-sensitive calculations. As such, HydroCAD routes completely through one structure at a time. Only after determining the outflow hydrograph from a given structure does it consider the next structure downstream.

The proposed storm drain system was designed to convey runoff from a 25-year storm event using Manning's Equation to compute full flow capacity of pipes. Flow values were checked using peak rates developed using the rational method.

Ditch scour protection was based upon methods outlined in the Maine Erosion Control BMP Handbook. A nomograph was used which provides a d50 stone size for a given ditch flow and velocity.

Land use, cover, delineation of watershed subcatchments, hydraulic flow paths and hydrologic soil types were obtained using the following data:

1. Portland East, Maine USGS 7.5 minute Quadrangles Maps.
2. Cumberland County, USDA Medium Intensity Soils Survey.
3. Onsite Topographic Survey with 2' contour intervals prepared by Sebago Technics.
4. Field Reconnaissance by DeLuca-Hoffman Associates, Inc.

## 12.8 Description of Site Watershed Model

The watershed model was developed to predict peak discharge rates emanating from the knoll and wetlands near the development area based upon the current and future conditions. For all practical purposes, the current land cover is not known to have changes since 1975 so the current conditions represent the baseline conditions for the site location of development stormwater management report.

The model allows the following analyses:

- Comparison of current storm water discharge rates with proposed conditions including the attenuation effect of detention facilities;
- Determination of flows within the pipe or channels allowing sizing, hydraulic grade lines, and velocities to be computed;

The predevelopment model also was divided into reaches and nodes which were logical for comparison with Postdevelopment conditions. A schematic of the predevelopment watershed model is included in the appended computations.

## 12.9 Predevelopment Watershed

- The current cover for the predevelopment watersheds reflect the forested cover of the area. Only a small portion of the site has lawn cover. The model was used a single catchment slightly under one acre in size.

A summary of the predevelopment watershed by hydrologic parameters is provided in the table as follows.

**TABLE 12-1**
**Predevelopment Watersheds**
**Computed Runoff and Peak Flows**

| | Runoff (inches) | | | Peak Discharge | | |
|---|---|---|---|---|---|---|
| Watershed # | 2 yr. | 10 yr. | 25 yr. | 2 yr. | 10 yr. | 25 yr. |
| 1 | 0.64 | 1.66 | 2.22 | 0.37 | 1.05 | 1.42 |

## 12.10 Postdevelopment Conditions

The post development conditions evaluated as part of this study included the various storm water management options and conveyance systems outlined above. This report presents the proposed systems selected after the various options had been considered. A schematic of the postdevelopment watershed model is included in the appended computations.

The postdevelopment conditions include the changes to land cover including 8,000 square feet of concrete pad, 7,255 square feet of pavement, 3,200 square feet of gravel, and 13,648 square feet of lawn area will exist. The RCN is elevated to 97 and the time of concentration is substantially reduced. Without detention, the following flows result:

**TABLE 12-2**
**Postdevelopment Flow without Detention**

| | Postdevelopment Runoff (in.) Peak Flows (cfs.) | | |
|---|---|---|---|
| **Watershed #** | **2 yr.** | **10 yr.** | **25 yr.** |
| 1 | 1.32 | 2.24 | 2.68 |

## 12.11 Requirement for Stormwater Management

Stormwater management is intended to provide either:

- Control of Peak Discharge Rates; or
- Measures to address Non-Point Runoff and Stormwater Quality

The need for Stormwater management can be determined by comparing the predevelopment or current flows with postdevelopment Flows. In the case of this the comparison of the points of interests without construction of detention ponds are shown in the following table:

**TABLE 12-3**
**Flow Rates at Points of Interests**
**Peak Flow Rate in cfs**
**(Without Detention)**

| POI # | Storm Event | Predevelopment | Postdevelopment |
|---|---|---|---|
| 1 | 2 year | 0.37 | 1.32 |
| | 10 year | 1.05 | 2.24 |
| | 25 year | 1.42 | 2.68 |

Stormwater Management to control of peak discharge rates is required.

This Stormwater Management will be achieved by construction of an underground storage system for the project consisting of buried infiltrators. As much of the site, including as practicable will be directed to this area. The performance of the pond has been modeled as follows:

| TABLE 12-4 | | | | |
|---|---|---|---|---|
| **Storm Event** | **Peak Inflow (cfs)** | **Peak Discharge (cfs)** | **Max Stage (ft)** | **Max Storage ($ft^3$)** |
| 2 year | 1.20 | 0.07 | 78.42 | 1,842 |
| 10 year | 1.92 | 0.35 | 79.01 | 2,697 |
| 25 year | 2.25 | 0.45 | 79.34 | 3,151 |

The postdevelopment flows from the underground detention is convoluted with the undetained flows from the balance of the site to determine the effect of detention has on peak postdevelopment flows. These values are compared to predevelopment flows in the Table as follows:

| TABLE 12-5<br>Flow Rates at Points of Interests<br>Peak Flow Rate in cfs(With Pond) | | | |
|---|---|---|---|
| **POI #** | **Storm Event** | **Predevelopment** | **Postdevelopment** |
| 1 | 2 year | 0.37 | 0.37 |
| | 10 year | 1.05 | 1.02 |
| | 25 year | 1.42 | 1.35 |

As shown, the proposed Stormwater provisions for control of peak discharges so as not to exceed the predevelopment flows for the 2, 10, and 25 year events.

The Stormwater Management provisions for the control of non-point runoff include water quality units. These units reflect the minimum size available and will exceed the requisite 40% TSS removal by a substantial amount as demonstrated in the supporting computations

## 12.12 Culvert and Storm Drainage Requirements

The onsite storm drain system will serve the following purposes:

1. To collect surface runoff collected from the access drives, concrete pad and services areas and immediate yard areas at catch basins or field inlets.
2. To collect surface runoff collected from low yard areas with catch basins.
3. To convey surface runoff collected from lot development areas to the water quality measures.
4. To convey surface runoff to suitable discharge points.

## 12.13 Ditch Sizing and Scour Protection

Computations for the capacity of the channel velocities, scour protection in the ditches and for the rip rap outlet aprons are provided in Appendix D.

## 12.14 Water Quality Provisions:

The proposed project will include water quality units as noted above.

## 12.15 Water Quality Standards:

The site currently discharges runoff through at multiple points to tributaries of the Fore and Stroudwater rivers.. The receiving waters are not in a lake watershed, are not considered a river, stream or brook most at risk from development, as listed in Chapter 502 of the Maine Department of Environmental Protection regulations effective December 31, 1997 and is not a coastal wetland. In accordance with Section 4.B.3.a.i., the project is required to meet the "Sliding Scale TSS Standards" due to the discharge to the open receiving waters and the development of three or more acres of structure area.

The sliding scale standard applicable to this site is a total suspended solids removal rate of 40.

Computations included in Attachment C summarize the aerial weighted average of TSS removal from the developed areas of the project site. The computations indicate the following removal efficiency for the overall project is at 55%.

## 12.16 Thermal Provisions

The project has considered potential thermal provisions and made the following provisions:

- Most pavement and concrete pad runoff is collected through a subsurface collection system and routed to the pond, a subsurface drainage system and open swales before entering streams or tributary watercourses. This avoids the direct discharge of runoff with elevated temperatures to the receiving waters.
- System underdrainage is interconnected with the storm system. Baseline groundwater will intermix with storm water to moderate the temperature.

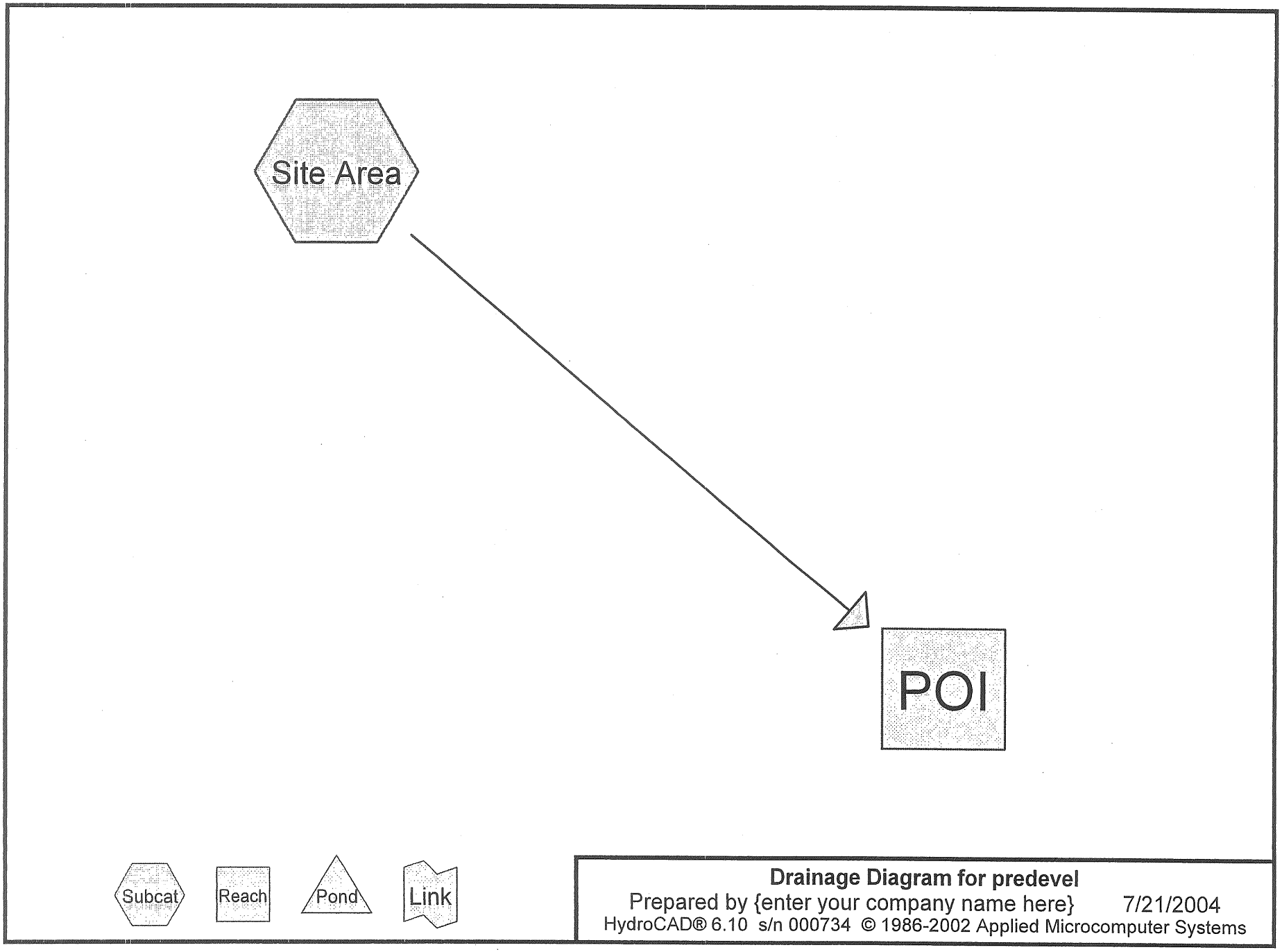
## 12.17 Conclusions

The Stormwater Management Plan for this project is anticipated to mitigate any impacts of development on stormwater runoff rates and to provide treatment of non-point pollutants in the runoff. Based on this study's findings, it is anticipated that runoff from the proposed improvements can be discharged with no adverse impact to downstream conditions and properties.

Water quality provisions have been provided for the site pursuant to the MeDEP sliding scale requirements.

# ATTACHMENT A

## Predevelopment Runoff Calculations




**Drainage Diagram for predevel**

Prepared by {enter your company name here} 7/21/2004

## Subcatchment Site Area: Site Area

Runoff = 1.42 cfs @ 12.27 hrs, Volume= 0.136 af, Depth= 2.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 990 | 74 | lawn |
| 31,113 | 70 | woods |
| 32,103 | 70 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.7 | 50 | 0.0250 | 0.1 | | **Sheet Flow, wooded**<br>Woods: Light underbrush n= 0.400 P2= 3.00" |
| 7.2 | 355 | 0.0270 | 0.8 | | **Shallow Concentrated Flow, woods**<br>Woodland Kv= 5.0 fps |
| 18.9 | 405 | Total | | | |

## Reach POI: (new Reach)

Inflow Area = 0.737 ac, Inflow Depth = 2.22"
Inflow = 1.42 cfs @ 12.27 hrs, Volume= 0.136 af
Outflow = 1.42 cfs @ 12.27 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

## Subcatchment Site Area: Site Area

Runoff = 1.05 cfs @ 12.27 hrs, Volume= 0.102 af, Depth= 1.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.70"

| Area (sf) | CN | Description |
|---|---|---|
| 990 | 74 | lawn |
| 31,113 | 70 | woods |
| 32,103 | 70 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.7 | 50 | 0.0250 | 0.1 | | **Sheet Flow, wooded** Woods: Light underbrush n= 0.400 P2= 3.00" |
| 7.2 | 355 | 0.0270 | 0.8 | | **Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps |
| 18.9 | 405 | Total | | | |

## Reach POI: (new Reach)

Inflow Area = 0.737 ac, Inflow Depth = 1.66"
Inflow = 1.05 cfs @ 12.27 hrs, Volume= 0.102 af
Outflow = 1.05 cfs @ 12.27 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

## Subcatchment Site Area: Site Area

Runoff = 0.37 cfs @ 12.30 hrs, Volume= 0.039 af, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

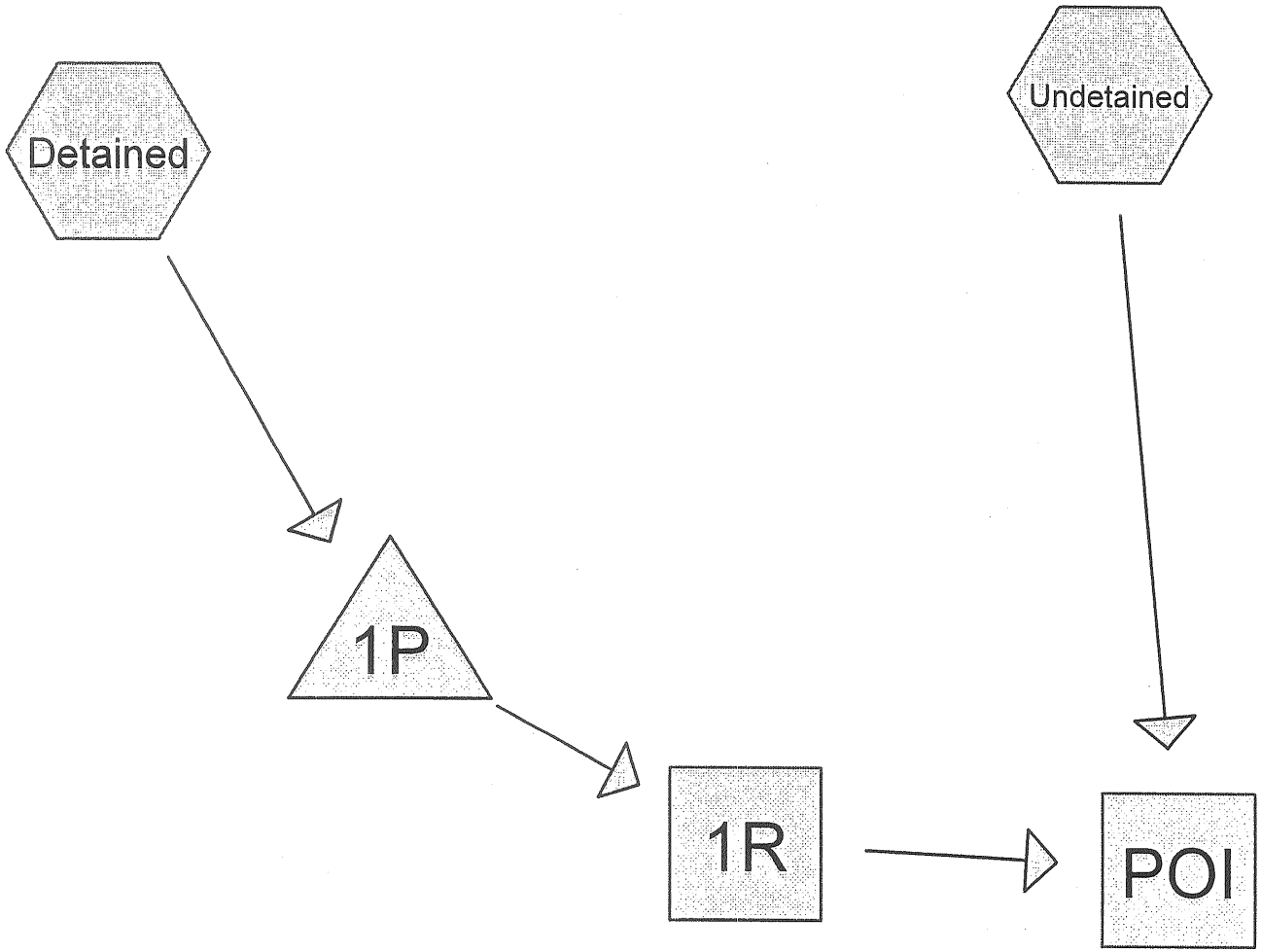
| Area (sf) | CN | Description |
|---|---|---|
| 990 | 74 | lawn |
| 31,113 | 70 | woods |
| 32,103 | 70 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.7 | 50 | 0.0250 | 0.1 | | **Sheet Flow, wooded**<br>Woods: Light underbrush n= 0.400 P2= 3.00" |
| 7.2 | 355 | 0.0270 | 0.8 | | **Shallow Concentrated Flow, woods**<br>Woodland Kv= 5.0 fps |
| 18.9 | 405 | Total | | | |

## Reach POI: (new Reach)

Inflow Area = 0.737 ac, Inflow Depth = 0.64"
Inflow = 0.37 cfs @ 12.30 hrs, Volume= 0.039 af
Outflow = 0.37 cfs @ 12.30 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs




Subcat Reach Pond Link

**Drainage Diagram for postdevel**

Prepared by {enter your company name here} 7/21/2004

## Subcatchment Detained: Site

Runoff = 2.25 cfs @ 12.02 hrs, Volume= 0.155 af, Depth= 4.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 13,626 | 98 | conc and paved |
| 3,200 | 91 | gravel |
| 0 | 74 | lawn |
| 16,826 | 97 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 0.8 | 55 | 0.0160 | 1.1 | | **Sheet Flow, gravel** Smooth surfaces n= 0.011 P2= 3.00" |
| 0.5 | 90 | 0.0050 | 3.2 | 2.52 | **Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 |
| 0.2 | 65 | 0.0130 | 5.2 | 4.06 | **Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 |
| 1.5 | 210 | Total | | | |

## Subcatchment Undetained: Undetained

Runoff = 0.94 cfs @ 12.21 hrs, Volume= 0.083 af, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 13,648 | 74 | lawn |
| 1,629 | 98 | paved |
| 0 | 91 | gravel |
| 15,277 | 77 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.2 | 50 | 0.0300 | 0.1 | | **Sheet Flow, grass** Grass: Dense n= 0.240 P2= 3.00" |
| 5.4 | 210 | 0.0170 | 0.7 | | **Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps |
| 0.1 | 62 | 0.0200 | 8.4 | 14.86 | **Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 |
| 2.6 | 130 | 0.0270 | 0.8 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 15.3 | 452 | Total | | | |

## Reach 1R: (new Reach)

Inflow Area = 0.386 ac, Inflow Depth = 3.71"
Inflow = 0.45 cfs @ 12.42 hrs, Volume= 0.119 af
Outflow = 0.45 cfs @ 12.45 hrs, Volume= 0.119 af, Atten= 0%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.8 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.9 fps, Avg. Travel Time= 1.8 min

Peak Depth= 0.08'
Capacity at bank full= 11.83 cfs
Inlet Invert= 76.00', Outlet Invert= 73.00'
3.00' x 0.50' deep channel, n= 0.025 Length= 100.0' Slope= 0.0300 '/'
Side Slope Z-value= 3.0 '/'

## Reach POI: (new Reach)

Inflow Area = 0.737 ac, Inflow Depth = 3.29"
Inflow = 1.35 cfs @ 12.22 hrs, Volume= 0.202 af
Outflow = 1.35 cfs @ 12.22 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

## Pond 1P: (new Pond)

Inflow Area = 0.386 ac, Inflow Depth = 4.80"
Inflow = 2.25 cfs @ 12.02 hrs, Volume= 0.155 af
Outflow = 0.45 cfs @ 12.42 hrs, Volume= 0.119 af, Atten= 80%, Lag= 23.9 min
Primary = 0.45 cfs @ 12.42 hrs, Volume= 0.119 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 79.34' Storage= 3,151 cf
Plug-Flow detention time= 135.4 min calculated for 0.119 af (77% of inflow)
An additional storage multiplier of 56.00 has been applied to the following areas and volumes

| Elevation (feet) | Cum.Store (cubic-feet) |
|---|---|
| 77.00 | 0 |
| 77.25 | 3 |
| 77.50 | 7 |
| 77.58 | 9 |
| 77.75 | 14 |
| 78.00 | 21 |
| 78.25 | 28 |
| 78.50 | 35 |
| 78.75 | 42 |
| 79.00 | 48 |
| 79.25 | 54 |
| 79.50 | 60 |
| 79.75 | 64 |
| 80.00 | 68 |
| 80.25 | 72 |
| 80.50 | 75 |

**Primary OutFlow** Max=0.45 cfs @ 12.42 hrs HW=79.34' (Free Discharge)
- **1=Orifice/Grate** (Controls 0.08 cfs)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **3=Orifice/Grate** (Controls 0.37 cfs)

| # | Routing | Invert | Outlet Devices |
|---|---|---|---|
| 1 | Primary | 76.70' | **1.4" Vert. Orifice/Grate** C= 0.600 |
| 2 | Primary | 79.40' | **0.5' long x 0.7' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50<br>Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32 |
| 3 | Primary | 78.42' | **4.0" Vert. Orifice/Grate** C= 0.600 |

## Subcatchment Detained: Site

Runoff = 1.92 cfs @ 12.02 hrs, Volume= 0.131 af, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.70"

| Area (sf) | CN | Description |
|---|---|---|
| 13,626 | 98 | conc and paved |
| 3,200 | 91 | gravel |
| 0 | 74 | lawn |
| 16,826 | 97 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 0.8 | 55 | 0.0160 | 1.1 | | **Sheet Flow, gravel** Smooth surfaces n= 0.011 P2= 3.00" |
| 0.5 | 90 | 0.0050 | 3.2 | 2.52 | **Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 |
| 0.2 | 65 | 0.0130 | 5.2 | 4.06 | **Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 |
| 1.5 | 210 | Total | | | |

## Subcatchment Undetained: Undetained

Runoff = 0.73 cfs @ 12.22 hrs, Volume= 0.064 af, Depth= 2.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.70"

| Area (sf) | CN | Description |
|---|---|---|
| 13,648 | 74 | lawn |
| 1,629 | 98 | paved |
| 0 | 91 | gravel |
| 15,277 | 77 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.2 | 50 | 0.0300 | 0.1 | | **Sheet Flow, grass** Grass: Dense n= 0.240 P2= 3.00" |
| 5.4 | 210 | 0.0170 | 0.7 | | **Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps |
| 0.1 | 62 | 0.0200 | 8.4 | 14.86 | **Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 |
| 2.6 | 130 | 0.0270 | 0.8 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 15.3 | 452 | Total | | | |

## Reach 1R: (new Reach)

Inflow Area = 0.386 ac, Inflow Depth = 3.04"
Inflow = 0.35 cfs @ 12.44 hrs, Volume= 0.098 af
Outflow = 0.35 cfs @ 12.47 hrs, Volume= 0.098 af, Atten= 0%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.6 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.9 fps, Avg. Travel Time= 2.0 min

Peak Depth= 0.07'
Capacity at bank full= 11.83 cfs
Inlet Invert= 76.00', Outlet Invert= 73.00'
3.00' x 0.50' deep channel, n= 0.025 Length= 100.0' Slope= 0.0300 '/'
Side Slope Z-value= 3.0 '/'

## Reach POI: (new Reach)

Inflow Area = 0.737 ac, Inflow Depth = 2.64"
Inflow = 1.02 cfs @ 12.23 hrs, Volume= 0.162 af
Outflow = 1.02 cfs @ 12.23 hrs, Volume= 0.162 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

## Pond 1P: (new Pond)

Inflow Area = 0.386 ac, Inflow Depth = 4.07"
Inflow = 1.92 cfs @ 12.02 hrs, Volume= 0.131 af
Outflow = 0.35 cfs @ 12.44 hrs, Volume= 0.098 af, Atten= 82%, Lag= 25.1 min
Primary = 0.35 cfs @ 12.44 hrs, Volume= 0.098 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 79.01' Storage= 2,697 cf
Plug-Flow detention time= 145.5 min calculated for 0.098 af (75% of inflow)
An additional storage multiplier of 56.00 has been applied to the following areas and volumes

| Elevation (feet) | Cum.Store (cubic-feet) |
|---|---|
| 77.00 | 0 |
| 77.25 | 3 |
| 77.50 | 7 |
| 77.58 | 9 |
| 77.75 | 14 |
| 78.00 | 21 |
| 78.25 | 28 |
| 78.50 | 35 |
| 78.75 | 42 |
| 79.00 | 48 |
| 79.25 | 54 |
| 79.50 | 60 |
| 79.75 | 64 |
| 80.00 | 68 |
| 80.25 | 72 |
| 80.50 | 75 |

**Primary OutFlow** Max=0.35 cfs @ 12.44 hrs HW=79.01' (Free Discharge)
- **1=Orifice/Grate** (Controls 0.08 cfs)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **3=Orifice/Grate** (Controls 0.27 cfs)

| # | Routing | Invert | Outlet Devices |
|---|---|---|---|
| 1 | Primary | 76.70' | **1.4" Vert. Orifice/Grate** C= 0.600 |
| 2 | Primary | 79.40' | **0.5' long x 0.7' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50<br>Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32 |
| 3 | Primary | 78.42' | **4.0" Vert. Orifice/Grate** C= 0.600 |

## Subcatchment Detained: Site

Runoff = 1.20 cfs @ 12.02 hrs, Volume= 0.081 af, Depth= 2.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

| Area (sf) | CN | Description |
|---|---|---|
| 13,626 | 98 | conc and paved |
| 3,200 | 91 | gravel |
| 0 | 74 | lawn |
| 16,826 | 97 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 0.8 | 55 | 0.0160 | 1.1 | | **Sheet Flow, gravel** Smooth surfaces n= 0.011 P2= 3.00" |
| 0.5 | 90 | 0.0050 | 3.2 | 2.52 | **Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 |
| 0.2 | 65 | 0.0130 | 5.2 | 4.06 | **Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 |
| 1.5 | 210 | Total | | | |

## Subcatchment Undetained: Undetained

Runoff = 0.32 cfs @ 12.22 hrs, Volume= 0.029 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

| Area (sf) | CN | Description |
|---|---|---|
| 13,648 | 74 | lawn |
| 1,629 | 98 | paved |
| 0 | 91 | gravel |
| 15,277 | 77 | Weighted Average |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.2 | 50 | 0.0300 | 0.1 | | **Sheet Flow, grass** Grass: Dense n= 0.240 P2= 3.00" |
| 5.4 | 210 | 0.0170 | 0.7 | | **Shallow Concentrated Flow, woods** Woodland Kv= 5.0 fps |
| 0.1 | 62 | 0.0200 | 8.4 | 14.86 | **Circular Channel (pipe),** Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 |
| 2.6 | 130 | 0.0270 | 0.8 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 15.3 | 452 | Total | | | |

## Reach 1R: (new Reach)

Inflow Area = 0.386 ac, Inflow Depth = 1.72"
Inflow = 0.07 cfs @ 13.66 hrs, Volume= 0.055 af
Outflow = 0.07 cfs @ 13.71 hrs, Volume= 0.055 af, Atten= 0%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.9 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 0.7 fps, Avg. Travel Time= 2.3 min

Peak Depth= 0.03'
Capacity at bank full= 11.83 cfs
Inlet Invert= 76.00', Outlet Invert= 73.00'
3.00' x 0.50' deep channel, n= 0.025 Length= 100.0' Slope= 0.0300 '/'
Side Slope Z-value= 3.0 '/'

## Reach POI: (new Reach)

Inflow Area = 0.737 ac, Inflow Depth = 1.36"
Inflow = 0.37 cfs @ 12.23 hrs, Volume= 0.084 af
Outflow = 0.37 cfs @ 12.23 hrs, Volume= 0.084 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

## Pond 1P: (new Pond)

Inflow Area = 0.386 ac, Inflow Depth = 2.50"
Inflow = 1.20 cfs @ 12.02 hrs, Volume= 0.081 af
Outflow = 0.07 cfs @ 13.66 hrs, Volume= 0.055 af, Atten= 94%, Lag= 98.0 min
Primary = 0.07 cfs @ 13.66 hrs, Volume= 0.055 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 78.42' Storage= 1,842 cf
Plug-Flow detention time= 188.4 min calculated for 0.055 af (69% of inflow)
An additional storage multiplier of 56.00 has been applied to the following areas and volumes

| Elevation (feet) | Cum.Store (cubic-feet) |
|---|---|
| 77.00 | 0 |
| 77.25 | 3 |
| 77.50 | 7 |
| 77.58 | 9 |
| 77.75 | 14 |
| 78.00 | 21 |
| 78.25 | 28 |
| 78.50 | 35 |
| 78.75 | 42 |
| 79.00 | 48 |
| 79.25 | 54 |
| 79.50 | 60 |
| 79.75 | 64 |
| 80.00 | 68 |
| 80.25 | 72 |
| 80.50 | 75 |

**Primary OutFlow** Max=0.07 cfs @ 13.66 hrs HW=78.42' (Free Discharge)
- **1=Orifice/Grate** (Controls 0.07 cfs)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **3=Orifice/Grate** (Controls 0.00 cfs)

| # | Routing | Invert | Outlet Devices |
|---|---|---|---|
| 1 | Primary | 76.70' | **1.4" Vert. Orifice/Grate** C= 0.600 |
| 2 | Primary | 79.40' | **0.5' long x 0.7' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50<br>Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32 |
| 3 | Primary | 78.42' | **4.0" Vert. Orifice/Grate** C= 0.600 |

# ATTACHMENT C

## Water Quality Calculations

**DeLUCA-HOFFMAN ASSOCIATES, INC.**
**Consulting Engineers**
778 Main Street Suite 8
SOUTH PORTLAND, MAINE 04106
**(207) 775-1121**
**FAX (207) 879-0896**

JOB UNUM

SHEET NO. _____ OF _____

CALCULATED BY D. Anderson DATE 7/21/04

CHECKED BY _____ DATE _____

SCALE _____

## Water Quality Calcs.

16,826 Treated to 60% TSS 91% x 60 = 55%

1,629 Untreated - 0%

# ATTACHMENT D

## Ditch Scour/Rip Rap Sizing Calculations

# ATTACHMENT E

## Miscellaneous Supporting Documentation

# APPENDIX D-13: Runoff Curve Numbers for use in TR-55 and TR-20

| Land Use/Cover type and hydrologic condition | Hydrologic Soil Group A | B | C | D |
|---|---|---|---|---|
| Cultivated Land | | | | |
| without conservation | 72 | 81 | 88 | 91 |
| with conservation | 62 | 71 | 78 | 81 |
| Pasture land | | | | |
| poor condition: heavily grazed, no mulch | 68 | 79 | 86 | 89 |
| fair condition: 50 to 75% ground cover | 49 | 69 | 79 | 84 |
| good condition: lightly grazed, > 75% ground cover | 39 | 61 | 74 | 80 |
| Meadow (protected from grazing) | 30 | 58 | 71 | 78 |
| Wood or forest land | | | | |
| Thin stand - poor cover, no mulch, burned over | 45 | 66 | 77 | 83 |
| Good stand - good cover, litter and brush cover soil | 25 | 55 | 70 | 77 |
| Wood yard (log storage) | 72 | 82 | 87 | 89 |
| Open space, lawns, parks, golf courses, cemeteries, etc. | | | | |
| Good condition: grass cover on 75% or more of the area | 39 | 61 | 74 | 80 |
| Fair condition: grass cover on 50 to 75 % of the area | 49 | 69 | 79 | 84 |
| Commercial and business areas (85% impervious) | 89 | 92 | 94 | 95 |
| Industrial districts (72% impervious) | 81 | 88 | 91 | 93 |
| Residential: Development completed, vegetation established, house and driveway drains toward road | | | | |
| Average lot size / Average % impervious | | | | |
| 1/8 acre or less (town houses) 65 | 77 | 85 | 90 | 92 |
| 1/4 acre 38 | 61 | 75 | 83 | 87 |
| 1/3 acre 30 | 57 | 72 | 81 | 86 |
| 1/2 acre 25 | 54 | 70 | 80 | 85 |
| 1 acre 20 | 51 | 68 | 79 | 84 |
| 2 acre 15 | 46 | 65 | 77 | 82 |
| Paved parking lots, roofs, driveways, etc.(excluding R-O-W) | 98 | 98 | 98 | 98 |
| Streets and roads | | | | |
| Paved with curb and storm sewers (excluding R-O-W) | 98 | 98 | 98 | 98 |
| Paved with ditches (including R-O-W) | 83 | 89 | 92 | 93 |
| Gravel (including R-O-W) | 76 | 85 | 89 | 91 |
| Dirt (including R-O-W) | 72 | 82 | 87 | 89 |
| Newly graded area (denuded) | 77 | 86 | 91 | 94 |

Note: Average runoff condition and $I_a = 0.2S$
Source: SCS, 1986 and DEP staff.

# APPENDIX D-1: One Day Precipitation Values (SCS)

**Table 3-4** 24 Hour Duration Rainfalls For Various Return Periods.
Natural Resources Conservation Service County Rainfall Data

| County | Storm Type | Return Interval or Frequency 1-Yr | 2-Yr | 5-Yr | 10-Yr | 25-Yr | 100-Yr | 500-Yr | Annual | |
|---|---|---|---|---|---|---|---|---|---|---|
| Androscoggin | | 2.5 | 3.0 | 3.9 | 4.6 | 5.4 | 6.5 | 7.8 | 45.3 | |
| Aroostook C | | 2.1 | 2.1 | 3.2 | 3.6 | 4.2 | 5.0 | 5.9 | 36.1 | (Presque Isle Area) |
| Aroostook N | | 2.0 | 2.3 | 3.0 | 3.5 | 4.0 | 4.8 | 5.7 | 36.1 | (Fort Kent Area) |
| Aroostook S | *S* | 2.2 | 2.5 | 3.3 | 3.8 | 4.4 | 5.3 | 6.4 | 39.0 | (Houlton Area) |
| Cumberland NW | *E* | 2.8 | 3.3 | 4.3 | 5.0 | 5.8 | 6.9 | 8.3 | 43.4 | (NW of St. Route 11) |
| Cumberland SE | *E* | 2.5 | 3.0 | 4.0 | 4.7 | 5.5 | 6.7 | 8.1 | 44.4 | (SE of St. Route 11) |
| Franklin | | 2.4 | 2.9 | 3.7 | 4.2 | 4.9 | 5.9 | 7.0 | 45.6 | |
| Hancock | | 2.4 | 2.7 | 3.6 | 4.2 | 4.9 | 6.0 | 7.2 | 45.2 | |
| Kennebec | *N* | 2.4 | 3.0 | 3.8 | 4.4 | 5.1 | 6.1 | 7.2 | 41.7 | |
| Knox-Lincoln | *O* | 2.5 | 2.9 | 3.8 | 4.4 | 5.1 | 6.2 | 7.4 | 46.1 | |
| Oxford E | *T* | 2.5 | 3.0 | 4.0 | 4.6 | 5.3 | 6.4 | 7.6 | 43.0 | (E of St. Route 26) |
| Oxford W | *E* | 3.0 | 3.5 | 4.5 | 5.2 | 6.0 | 7.1 | 8.4 | 43.8 | (W of St. Route 26) |
| Penobscot N | *S* | 2.2 | 2.5 | 3.3 | 3.8 | 4.4 | 5.4 | 6.4 | 41.5 | (N of Can.-Atl. Rwy) |
| Penobscot S | | 2.4 | 2.7 | 3.5 | 4.1 | 4.8 | 5.8 | 6.9 | 39.5 | (S of Can.-Atl. Rwy) |
| Piscataquis N | *1* | 2.2 | 2.5 | 3.3 | 3.8 | 4.4 | 5.3 | 6.3 | 38.5 | (N of Can.-Atl. Rwy) |
| Piscataquis S | | 2.3 | 2.6 | 3.4 | 4.0 | 4.6 | 5.5 | 6.6 | 41.0 | (S of Can.-Atl Rwy) |
| Sagadahoc | *A* | 2.5 | 3.0 | 3.9 | 4.6 | 5.4 | 6.5 | 7.8 | 45.3 | |
| Somerset N | *N* | 2.2 | 2.5 | 3.3 | 3.8 | 4.4 | 5.3 | 6.3 | 37.3 | (N of Can.-Atl. Rwy) |
| Somerset S | *D* | 2.4 | 2.7 | 3.5 | 4.1 | 4.7 | 5.7 | 6.8 | 39.5 | (S of Can.-Atl. Rwy) |
| Waldo | | 2.5 | 2.8 | 3.7 | 4.3 | 4.9 | 6.0 | 7.1 | 47.2 | |
| Washington | *2* | 2.4 | 2.5 | 3.4 | 4.0 | 4.8 | 5.9 | 7.1 | 44.2 | |
| York | | 2.5 | 3.0 | 4.0 | 4.6 | 5.4 | 6.6 | 7.8 | 46.7 | |

NOTES: REVISED 4/10/92 Lew P. Crosby

24-HR. DURATION RAINFALL

SOURCES: 24-HR. DATA — TP 40

ANNUAL DATA — CDAN

**Note 1:** [1]Use ***Type II*** for Oxford County (with the exception of towns listed below) and Penobscot County (with the exception of towns listed below) and all Maine counties not listed below.

**Note 2:** [2]Use ***Type III*** for York, Cumberland, Androscoggin, Sagadahoc, Kennebec, Waldo, Knox, Piscataquis, Somerset, Franklin, Aroostook, Lincoln, Hancock, Washington Counties; the following Oxford County Towns: Porter, Brownfield, Hiram, Denmark, Oxford, Hebron, Buckfield, and Hartford; and the following Penobscot County towns: Dixmont, Newburgh, Hampden, Bangor, Veazie, Orono, Bradley, Clifton, Eddington, Holden, Brewer, Orrington, Plymouth, Etna, Carmel, Hermon, Glenburn, Old Town, Milford, and Greenfield.

# SECTION 14

# EROSION AND SEDIMENTATION CONTROL REPORT

# UNUM PROVIDENT: EMERGENCY GENERATOR PAD CONGRESS STREET – PORTLAND, MAINE

**Prepared for:**

**Unum Provident**
**2211 Congress Street**
**Portland, Maine 04101**

**Prepared by:**

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**July 2004**

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**Attachments**

## 14.0 Introduction

DeLuca-Hoffman Associates, Inc. has been retained by Unum Provident to assist in the site design and site permitting of a proposed 8,000 square foot Emergency Generator Pad at the Unum Provident Congress Street campus in Portland, Maine.

Unum Provident is proposing the addition of an emergency generator pad at the Congress Street Campus in Portland, Maine. This application for a modification for the generator pad is intended to address the items attendant with the Site Location of Development and Natural Resource Regulations and Permits of the existing campus. In order to provide flexibility for the generator pad over time, this application seeks approval for the upper limit of potential site and infrastructure needs for the emergency generator pad. Initial construction may actually result in lesser impacts and infrastructure requirements.

The application seeks approval to construct an emergency generator pad with nominal dimensions of 80 by 100 feet (8,000 square feet). The Emergency Generator Pad needs to be sited close to existing infrastructure near the mechanical feeds to H.O. #2.

It is noted that the activity at the generator pad should not affect this permit noting:

- Any air emissions licensing will be permitted separately; and
- The applicant agrees to the stipulation to submit supplemental information prior to the installation of equipment which could be considered noise pursuant to the requirements of MeDEP Air Quality Regulations 06.096.

The proposed generator pad will be located in the portion of the campus bounded to the south by Congress Street, to the west by the campus entrance drive from Congress Street, to the north by an internal driveway, and to the east by the Unum Daycare and wetlands. This area is currently forested.

The area is characterized as an upland peninsula surrounded by wetlands. The proposed activity will result in the disturbance of approximately 0.75 acres of land for the concrete pad, drive, construction of stormwater management facilities, and related site work.

The proposed site contains wetland areas but no streams. The project proposes to fill approximately 450± square feet of the wetlands located at the ditch at the proposed entrance to the site.

This narrative contains the Erosion Control Plan designed and required for this project.

The project is not in a lake watershed or a watershed most at risk from development.

## 14.1 Existing Site Conditions

The Unum Provident Campus is a large facility which holds an existing Site Location of Development Permit. This modification focuses on the immediate area where the emergency generator pad would be constructed. The area as described in the introduction is about 2.80 acres with the "project area" (disturbed area) being about 0.75 acres.

Topography in the area is mild with the upland peninsula gently rising above the wetlands which surround three sides. Elevations in this area range from 86 to 74 with the elevations in the area of the proposed generator pad ranging from 86 to 76. The site conditions are depicted on Drawing C-1 of the plan set.

Drainage flows from the upland area to the adjacent wetlands and continues through the wetlands to an unnamed tributary of the Stroudwater River. The drainage is tributary to the Stroudwater River and the Fore River. These receiving waters are not listed as rivers most at risk from development, sensitive, threatened regions, or watershed.

Soils on the site are mapped on the USDA SCS Map as being Scantic silt loam. Figures 8, 9, and 10 appended to this section provide the Medium Intensity Soils, Sand and Gravel Aquifer, and Surficial Geology for the site. Bedrock is known to be relatively shallow in portions of the campus.

DeLuca-Hoffman Associates, Inc. is not aware of any areas of existing erosion on the site.

## 14.2 Overview of Soil Erosion and Sedimentation Concerns

The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. The "K" value is frequently used with the universal soil loss equation. The higher values are indicative of the more erodible soils. The project area consists of the following soils based upon the USDA Medium Intensity Soils Survey provided as Figure 8 in Section 1 of this application.

| Soil Type | Soil Description | K Value |
|---|---|---|
| Scantic | Silt Loam | 0.28 to 0.49 |

Based on a review of the "K" values, the onsite soils in the area where construction is focused are moderately susceptible to erosion after the cover material is stripped.

The primary emphasis of the Erosion and Sedimentation Control Plan to be implemented for this project is as follows:

1. Development of a careful construction sequence.
2. Rapid stabilization of denuded areas to minimize the period of soil exposure.
3. Rapid stabilization of steep slopes or concentrated drainage paths to avoid rill and gully erosion.
4. The use of on-site measures to capture initial sediment (hay bales/silt fence, etc.).
5. The provision for the use of Dirtbags for dewatering of areas likely to encounter groundwater.
6. Inclusion of special provisions for winter construction.
7. The implementation of long-term measures for erosion/sediment control and pollutant treatment through the construction of permanent water quality measures.

## 14.3 Description and Location of Limits of All Proposed Earth Movements

The proposed Emergency Generator Pad will involve the disturbance of about 0.75 acres of land. This land is currently forested and is most of an upland peninsula surrounded on three sides by wetlands. The proposed construction includes:

- Construction of a 8,000 square foot concrete pad;
- The construction of a below grade detention system;
- The construction of a driveway and gravel area for switch gear;
- The connection of support utilities; and
- The establishment of turf in areas disturbed for construction.

In general, the limit of disturbance is anticipated to closely mirror the project grading limits except for extensions to the utility connections.

Earthmoving activities will generally be to strip and grub the site, stockpile the loam for subsequent reuse, regrade and contour the land to support the proposed enclosed emergency generator pad and the installation of buried utilities to connect to existing utilities within the campus.

Upon completion of the project, stormwater from the concrete pad, parking, and rear gravel area will be intercepted and discharged to the water quality units and stormwater detention facility. Due to concerns on protecting this underground detention area from sedimentation during construction, this construction will not occur until late in the project. However, the site will be covered with subbase gravel for the construction period to reduce the period of exposure of the native erosion susceptible subgrade.

Earthwork is anticipated to involve well under 5,000 cubic yards.

## 14.4 Existing and Proposed Drainage Features

The existing drainage regime is principally sheet flow from the upland peninsula to the adjacent wetlands. The stormwater discharge has some natural attenuation in the wetland before discharging to a watercourse which leads to the Stroudwater River.

During construction, the flow is anticipated to remain sheet flow from the protective gravel surface. Upon completion of the project, most of the area affected by the project will be directed to water quality units and the underground stormwater system. An outlet control structure will control the release rate from the detention area across a riprap apron and into the wetland.

The proposed drainage system is being designed to have peak discharge rates from the project site below existing levels to avoid causing downstream erosion or flooding problems. The control of the peak runoff rates is discussed in more detail in the Stormwater Management Report provided as part of this application.

## 14.4A Critical Areas

The critical areas of the site include the wetlands around three sides of the proposed project.

## 14.5 Erosion/Sedimentation Control Devices

The Contractor as part of the site development will implement the following erosion and sediment control devices. These devices shall be installed as indicated on the plans or as described within this report. For further reference, see the *Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices.*

1. Siltation fence shall be installed downslope of any disturbed areas to trap runoff borne sediments until the site is revegetated. The silt fence shall be installed per the detail provided in the plan set and inspected immediately after each rainfall and at least daily during prolonged rainfall. Repairs shall be made immediately by the Contractor if there are any signs of erosion or sedimentation below the fence line. Proper placement of stakes and keying the bottom of the fabric into the ground is critical to the fence's effectiveness. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind the fence, the barrier shall be replaced with a stone check dam.

2. After the site has been cleared and grubbed, the subgrade will be rough graded with a protective layer of subbase gravel placed and compacted across the site. This subbase gravel should be a minimum of 6 inches in thickness. Deeper gravels with geotextile fabric should be placed in areas which will be used for access and staging.

3. Straw or hay mulch including hydroseeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed on slopes of less than 10 percent shall be anchored by applying water; mulch placed on slopes steeper than 10 percent shall be covered with a fabric netting and anchored with staples in accordance with the manufacturer's recommendations. Proposed drainage channels, which are to be revegetated, shall receive Curlex blankets by American Excelsior or equal. Mulch application rates are provided in Attachment A of this section. Hay mulch shall be available on site at all times in order to provide immediate temporary stabilization when necessary. Where necessary for concentrated runoff to be conveyed down a slope, a temporary stone channel or pipe sluice shall be used to convey runoff down the slope.

4. A water quality unit will be required to provide water quality enhancement for stormwater runoff from the parking and building areas after construction.

5. Riprap slopes, ditch linings, stone check dams, hay bale barriers, and culvert outlet aprons are intended to reduce runoff velocities and protect denuded soil surfaces from concentrated flows. Installation details and stone sizes are provided in the construction plan set on the erosion control detail sheets.

6. A construction entrance will be constructed at all access points onto the site to prevent tracking of soil onto the internal driveway system of the campus.

7. Stone sediment traps or a premanufactured SiltSack™ will be installed at catch basin inlets to prevent silt from entering the storm drain system. Installation details are provided in the plan set on the erosion control detail sheets.

8. Reinforced turf or riprap will be used on extremely steep slopes in areas designated on the drawings.

9. Dirtbags™ will be required to be on site and available for construction dewatering. The Contractor will be required to provide four Dirtbags™ with one prepared for operation prior to commencing any trenching operations.

10. Loam and seed is intended to serve as the primary permanent revegetative measure for all denuded areas not provided with other erosion control measures, such as riprap. Specific areas as shown on the landscape plan will receive sod. Application rates are provided in Attachment A of this section for temporary and permanent seeding.

11. Water will be the principal means to control fugitive dust.

## 14.6 Temporary Erosion/Sedimentation Control Measures

The following are planned as temporary erosion/sedimentation control measures during construction:

1. A crushed stone-stabilized construction entrance shall be placed for the construction access points from the campus drive.

2. Siltation fence shall be installed along the downgradient side of the proposed improvement areas prior to work in these areas. Additional siltation fence shall be installed at the toe of slope in cut areas as work progresses. The siltation fence will remain in place and properly maintained until the site is acceptably revegetated.

3. Dirtbags™ shall be installed in accordance with the details in the plan set. The Dirtbags'™ function on the project is to receive any water pumped from excavations during construction. A Dirtbag™ shall be installed any prepared for operation prior to any trenching on site. When Dirtbags™ are observed to be at 50% capacity, they shall be cleaned or replaced. Stone under the Dirtbag™ shall be removed and replaced concurrently.

4. Temporary stockpiles of stumps, grubbings, or common excavation will not be permitted to remain in the project area due to space limitations.

5. All denuded areas shall be rough graded and covered with at least 6 inches of compacted subbase gravel within 14 days of initial disturbance of soil.

6. All soils disturbed between November 1 and April 1 will be covered with mulch within 5 days of disturbance, prior to any predicted storm event of the equivalent of ½" of equivalent rainfall in a 24-hour period, or prior to any work shutdown lasting

more than 35 hours (including weekends and holidays). The mulch rate shall be double the normal rate.

7. For work which is conducted between November 1 and April 15 of any calendar year, all gravel work areas shall be covered with a 1-inch layer of crushed stone which is subsequently rolled and compacted. Denuded areas where loam has been placed for restoration shall be covered with hay mulch, applied at twice the normal application rate and (in areas over 10% grade) anchored with a fabric netting. The time period for applying mulch shall be limited to 5 days for all areas or immediately in advance of a predicted rainfall event.

8. The access drive shall be swept to control mud and dust as necessary. A street sweeper shall be available from the Contractor on immediate notice or request from the Owner, City or regulatory agency. A water truck shall be used to control dust both on the site and along points of ingress and egress.

9. During grubbing operations stone check dams or hay bale barriers shall be installed at any evident concentrated flow discharge points.

10. Silt fencing with a maximum stake spacing of 6 feet should be used, unless the fence is supported by wire fence reinforcement of minimum 14 gauge and with a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The bottom of the fence should be properly anchored a minimum of 6" per the plan detail and backfilled. Any silt fence identified by the owner or reviewing agencies, as not being properly installed during construction shall be immediately repaired in accordance with the installation details.

11. Storm drain catch basin inlet protection shall be provided through the use of stone sediment barriers or a premanufactured SiltSack™ as distributed by A. H. Harris Company, Portland, Maine. Stone sediment barrier installation details are provided in the plan set. The barriers or SiltSacks™ shall be inspected after each rainfall and repairs made as necessary, including the removal of sediment. Sediment shall be removed and the barrier or SiltSack™ restored to its original dimensions when the sediment has accumulated to ½ the design depth of the barrier. Sediment shall be removed from SiltSacks™ as necessary. Inlet protection shall be removed when the tributary drainage area has been stabilized.

12. All slopes over 4:1 shall receive erosion control mesh.

13. Slopes steeper than 3:1 shall receive reinforced turf unless rip rap or other non-vegetative stabilization measures are required by the contract.

14. Areas of visible erosion shall be stabilized with crushed stone. The Owner's representative in consultation with the engineer shall determine the size of the stone.

15. Catch basins shall all be installed with an opening 2'-6" below finish grade to receive a 4" underdrain with an end cap. A 3'-0" stub of underdrain surrounded by 6" of ¾" crushed stone and filter fabric shall be installed.

## 14.6A Standards for Stabilizing Sites for the Winter

1. Standard for the Timely Stabilization of Ditches and Channels: The contractor shall construct and stabilize all stone-lined ditches and channels on the site by November 15. The contractor shall construct and stabilize all grass-lined ditches and channels on the site by September 15. If the contractor fails to stabilize a ditch or channel to be grass-lined by September 15, then the contractor shall take one of the following actions to stabilize the ditch for late fall and winter.

   i. Install a sod lining in the ditch. The contractor shall line the ditch with properly installed sod by October 1. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, watering the sod to promote root growth into the disturbed soil, and anchoring the sod with jute or plastic mesh to prevent the sod strips from sloughing during flow conditions.

   ii. Install a stone lining in the ditch. The contractor shall line the ditch with stone riprap by November 15. The contractor shall hire a registered professional engineer to determine the stone size and lining thickness needed to withstand the anticipated flow velocities and flow depths within the ditch. If necessary, the contractor shall regrade the ditch prior to placing the stone lining so as to prevent the stone lining from reducing the ditch's cross-sectional area.

2. Standard for the timely stabilization of disturbed slopes: The contractor shall construct and stabilize stone-covered slopes by November 15. The contractor shall seed and mulch all slopes to be vegetated by September 15. The department will consider any area having a grade greater than 15% (10H: 1V) to be a slope. If the contractor fails to stabilize any slope to be vegetated by September 15, then the contractor shall take one of the following actions to stabilize the slope for late fall and winter.

   i. Stabilize the soil with temporary vegetation and erosion control mesh. By October 1 the contractor shall seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1000 square feet and apply erosion control mats over the mulched slope. The contractor shall monitor growth of the rye over the next 45 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed slope by November 15, then the contractor shall cover the slope with a layer of wood waste compost as described in item iii of this standard or with stone rip rap as described in item iv of this standard.

   ii. Stabilize the slope with sod. The contractor shall stabilize the disturbed slope with properly installed sod by October 1. Proper installation includes the contractor pinning the sod onto the slope with wire pins, rolling the sod to guarantee contract between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The contractor shall not use late-season sod installation to stabilize slopes having a grade greater than 33% (3H: 1V) or having groundwater seeps on the slope face.

iii. Stabilize the slope with wood waste compost. The contractor shall place a six-inch layer of wood waste compost on the slope by November 15. Prior to placing the wood waste compost, the contractor shall remove any snow accumulation on the disturbed slope. The contractor shall not use wood waste compost to stabilize slopes having grades greater than 50% (2H: 1V) or having groundwater seeps on the slope face.

iv. Stabilize the slope with stone rip rap. The contractor shall place a layer of stone riprap on the slope by November 15. The contractor shall hire a registered professional engineer to determine the stone size needed for stability and to design a filter layer for underneath the riprap.

3. Standard for the Timely Stabilization of Disturbed Soil: By September 15, the contractor shall seed and mulch all disturbed soils on areas having a slope less than 15%. If the contractor fails to stabilize these soils by this date, then the contractor shall take one of the following actions to stabilize the soil for late fall and winter.

i. Stabilize the soil with temporary vegetation. By October 1, the contractor shall seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1000 square feet, and anchor the mulch with plastic netting. The contractor shall monitor the growth of the rye over the 45 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before November 15, then the contractor shall mulch the area for over-winter protection as described in item iii of this standard.

ii. Stabilize the soil with sod. The contractor shall stabilize the disturbed soil with properly installed sod by October 1. Proper installation includes the contractor pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

iii. Stabilize the soil with mulch. By November 15, the contractor shall mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1000 square feet on the area so that no soil is visible through the mulch. Prior to applying the mulch, the contractor shall remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the contractor shall anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

## 14.7 Sedimentation Sumps

The use of shallow sediment sumps within the work area to direct as much runoff to the area before discharge to the wetland is encouraged

## 14.8 Permanent Erosion Control Measures

The following permanent erosion control measures have been designed as part of the Erosion/Sedimentation Control Plan:

1. All storm drain pipes which are not connected to a formal inlet or outlet shall have riprap aprons at their outlet to protect the outlet and receiving channel from scour and deterioration. Installation details are provided in the plan set. The aprons shall be installed and stabilized prior to directing runoff to the tributary pipe or culvert. It is noted that all inlets and outlets over 18" in diameter are to have a flared concrete inlet and an aluminum bar rack. Pipes less than 18 inches in diameter are to have an HDPE flare. Riprap shall not be extended above the area shown on the plans.

2. All areas disturbed during construction, but not subject to other restoration (paving, riprap, etc.) will be loamed, limed, fertilized, mulched, and seeded. Fabric netting, anchored with staples, shall be placed over the mulch in areas where the finish grade slope is greater than 10 percent except in the areas with over 3:1 slopes where reinforced turf is required. Native topsoil shall be stockpiled and temporarily stabilized with seed and mulch and reused for final restoration when it is of sufficient quality. Where necessary, compost shall be added and blended to increase the organic content of the soil.

3. Catch basins shall be provided with sediment sumps for all outlet pipes that are 12" in diameter or greater.

4. Permanent water quality measures will be installed. This includes the water quality units to be constructed near the entrance to the underground detention area.

## 14.9 Timing and Sequence of Erosion/Sedimentation Control Measures

The following construction sequence shall be required to insure the effectiveness of the erosion and sedimentation control measures are optimized. These measures follow the separate requirements to be employed during the building demolition phase of the project.

Note: For all grading activities, the Contractor shall exercise extreme caution not to overexpose the site by limiting the disturbed area.

1. Install crushed stone-stabilized construction entrances from the driveway as shown on the Erosion and Sedimentation Control Drawing.
2. Install Silt Fence with the minimum amount of clearing necessary to access the area for installation.
3. Establish and prepare Dirtbag™ area across the street in a yard area near HO#2.
4. Install stone and hay bale check dams at any concentrated flow discharge points.
5. Clear and grub the project area.
6. Rough grade the subgrade and install a minimum 6-inch layer of subbase gravel over the denuded area.

7. Shape, loam and seed, mulch and mesh the perimeter areas.
8. Construct other site improvements and utilities except for the underground detention basin.
9. Raise catch basins to grade and install inlet protection devices.
10. Install pavement as detailed on the site plans.
11. Loam, lime, fertilize, seed and mulch all remaining disturbed and denuded areas except along the southerly side of the building.
12. Remove all accumulated sediment from silt barriers.
13. Install the underground detention basin and install the outlet control device.
14. Review stability of the site. If a 75% catch of grass is achieved, remove all other temporary erosion control devices.

Soil will be considered disturbed if it does not have an established stand of vegetation covering at least 75% of the soil surface or has not been mulched with hay applied at a rate of 230 lb./1000 sq. ft.

It is anticipated that site work may be suspended prior to winter. If so, the General Contractor shall schedule a meeting with the Owner, and Owner's representatives to review the site for conformance with the plan. This meeting shall be scheduled at least 10 days prior to winter shutdown. The Owner may elect to provide the Contractor with a punch list for measures to be complete before the interim shutdown. The Owner's punch list shall not obviate the Contractor's responsibility for compliance with the erosion control requirements of the project or permits.

## 14.10 Contracting Procedure

A General Contractor under contract to the Owner will construct the project. It is possible a design build firm could be engaged. The Contractor shall submit a schedule for the completion of the work which will satisfy the following criteria:

1. The above construction sequence should generally be completed in the specified order; however, several separate items may be constructed simultaneously. Work must also be scheduled or phased to prevent the extent of the exposed areas as specified below. The intent of this sequence is to provide for erosion control and to have structural measures such as silt fence, the protective gravel layer, and construction entrances in place before large areas of land are denuded.
2. The work shall be conducted in sections which will comply with this narrative.

The Contractor must install any added measures, which may be necessary to control erosion/sedimentation from the site and fugitive dust emissions dependent upon the actual site and weather conditions.

The Contractor shall note that no area within 50 feet of a slope with a vertical drop of more than 3' in 50 feet shall remain denuded for a period of over 5 days before it is temporarily stabilized. Temporary stabilization shall be the installation of mulching. All

other areas shall be stabilized within 14 days. For construction between November 1 and April 15 of any calendar year, all areas shall be temporarily stabilized at the earlier time frames specified above.

## 14.11 Provisions for Maintenance of the Erosion/Sedimentation Control Features

The Owner will contract the project. The project is subject to the requirement of a MeDEP Site Location of Development Permit and permits from the City of Portland. The Owner will require the Contractor to prepare a list and designate by name, address and telephone number all individuals who will be responsible for implementation, inspection and maintenance of all erosion control measures identified within this section and as contained in this Erosion and Sedimentation Control Plan. Specific responsibilities of the inspector(s) will include:

1. Execution of the Contractor/Subcontractor Certification contained in Attachment C by any and all parties responsible for erosion control measures on the site.

2. Assuring and certifying the construction sequence is in conformance with the specified schedule of this section. A weekly certification stating compliance, any deviations, and corrective measures necessary to comply with the erosion control requirements of this section shall be prepared and signed by the inspector(s).

3. In addition to the weekly certifications, the inspector(s) shall maintain written reports recording construction activities on site which include:
   - Dates when major grading activities occur in a particular areas.
   - Dates when major construction activities cease in a particular area, either temporarily or permanently.
   - Dates when an area is stabilized.

4. Inspection of this project work site on a weekly basis and after each significant rainfall event (0.5 inches or more within any consecutive 24 hour period) during construction until permanent erosion control measures have been properly installed and the site has been stabilized. Inspection of the project work site shall include:
   - Identification of proper erosion control measure installation in accordance with the erosion control detail sheet or as specified in this section.
   - Determine whether each erosion control measure is properly operating. If not, identify damage to the control device and determine remedial measures.
   - Identify areas that appear vulnerable to erosion and determine additional erosion control measures that should be used to improve conditions.
   - Inspect areas of recent seeding to determine percent catch of grass. A minimum catch of 75 percent is required prior to removal of erosion control measures.
   - Record date of installation of sorbent bags in catch basins, the dates of paving, the date of removal, and the disposal method and location.

Accumulated silt/sediment should be removed when the depth of sediment reaches 50 percent of the barrier height. Accumulated silt/sediment should be removed from behind silt fencing when the depth of the sediment reaches 6 inches.

5. If inspection of the site indicates a change should be made to the erosion control plan, either to improve effectiveness or correct a site-specific deficiency, the inspector shall immediately implement the corrective measure and notify the owner of the change.

Once construction has been completed, long term maintenance of the detention pond and catch basins will be the responsibility of the applicant. The catch basin sumps shall be inspected in April and October of each year. Sediment shall be removed when the depth of sediment reaches one half the depth of the sump.

All certifications, inspection forms and written reports prepared by the inspector(s) shall be filed with the Owner. All written certifications, inspection forms, and written reports must be filed within one (1) week of the inspection date.

## 14.12 Preconstruction Conference

Prior to any construction at the site, representatives of the Contractor, and the site design engineer shall arrange for and meet with the Owner to discuss the scheduling of the site construction. On or before that meeting, the Contractor will prepare a detailed schedule and a marked-up site plan indicating areas and components of the work and key dates showing date of disturbance and completion of the work. Three copies of the schedule and marked-up site plan shall be provided to the Owner.

## 14.13 Attachments

Attachment A – Seeding Plan
Attachment B – Sample EPA Certification and Inspection Forms

## 14.14 Plan References

DeLuca-Hoffman Associates, Inc. Drawings C-1 to C-6 for the 2004 Emergency Generator Pad

# ATTACHMENT A

# SEEDING PLAN

## SEEDING PLAN LAWN AND OTHER AREAS

Project UNUM Emergency Generator Pad

Site Location Congress Street, Portland

X Permanent Seeding _____ Temporary Seeding

1. Area to be seeded: <1 acres, OR _____ M Sq. Ft.
2. Instructions on preparation of soil: Prepare a good seed bed for planting method used.
3. Apply lime as follows: _____ #/acres, OR 138#/M Sq. Ft.
4. Fertilize with _____ pounds of - - N-P-K/ac. OR
   18.4 pounds of 10 - 20 - 20 N-P-K/M Sq. Ft.
5. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
6. Seed with the following mixture:

   45% Kentucky Bluegrass
   45% Creeping Red Fescue
   10% Perennial Ryegrass

When using small grain as nurse crop seed it at one-half the normal seeding rate.

7. Mulching instructions: Apply at the rate of _____ tons per acre. OR
   230 pounds per M. Sq. Ft.

| | Amount | Unit #, Tons, Etc. |
|---|---|---|
| 8. TOTAL LIME..... | 138 | #/1000 sq. ft. |
| 9. TOTAL FERTILIZER..... | 13.8 | #/1000 sq. ft. |
| 10. TOTAL SEED..... | 6 to 8 | #/1000 sq. ft. |
| 11. TOTAL MULCH..... | 230 | #/1000 sq. ft. |
| 12. TOTAL other materials, seeds, etc..... | Compost is likely required | |

13. REMARKS

- Recommended seeding dates after August 15.
- For areas with slopes >10%, waterways, areas within 100 feet of the stream, and fall and winter erosion control areas, mulch netting shall be used per manufacturer's specifications.
- Fertilizer requirements shall be subject to actual test results of the topsoil used for the project. The Contractor shall be responsible for providing topsoil test results for pH and recommended fertilizer application rates to the owner
- All loam shall have compost or peat admixtures to raise the organic content to 8%.

# TEMPORARY SEEDING PLAN

Project UNUM Emergency Generator Pad

Site Location 2211 Congress Street, Portland

_____ Permanent Seeding  X  Temporary Seeding

1. Area to be seeded: varies acres, OR _____ M Sq. Ft.
2. Instructions on preparation of soil: Prepare a good seed bed for planting method used.
3. Apply lime as follows: _____ #/acres, OR 138#/M Sq. Ft.
4. Fertilize with _____ pounds of ____ - ____ - ____ N-P-K/ac. OR
   18.4 pounds of 10 - 20 - 20 N-P-K/M Sq. Ft.
5. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
6. Seed with the following mixture:

   50% Perennial Ryegrass
   50% Winter Rye

When using small grain as nurse crop seed it at one-half the normal seeding rate.

7. Mulching instructions: Apply at the rate of _____ tons per acre. OR
   180 pounds per M. Sq. Ft.

| | Amount | Unit # | Tons, Etc. |
|---|---|---|---|
| 8. | TOTAL LIME | 138 | #/1000 sq. ft. |
| 9. | TOTAL FERTILIZER | 18.4 | #/1000 sq. ft. |
| 10. | TOTAL SEED | 6 | #/1000 sq. ft. |
| 11. | TOTAL MULCH | 180 | #/1000 sq. ft. |
| 12. | TOTAL other materials, seeds, etc. | | |

13. REMARKS

The above seed mix is required in all temporarily disturbed wetland areas.

Fertilizer requirements shall be subject to actual test results of the topsoil used for the project. The Contractor shall be responsible for providing topsoil test results for pH and recommended fertilizer application rates to the owner.

# ATTACHMENT B

# SAMPLE EPA CERTIFICATION AND INSPECTION FORMS

# STORMWATER POLLUTION PREVENTION PLAN

## CONTRACTOR/SUBCONTRACTOR CERTIFICATION

PROJECT INFORMATION

Project Name: UNUM Emergency Generator Pad

Address: Congress Street

Portland, Maine 04101

CONTRACTOR/SUBCONTRACTOR INFORMATION

Firm Name:

Address:

Telephone:

Type of Firm:

CERTIFICATION STATEMENT

"I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the stormwater discharges associated with industrial activity from the construction site identified as part of this certification."

_____

Signature

_____

Typed Name

_____

Title

_____

Date

# STORMWATER POLLUTION PREVENTION PLAN

## INSPECTION REPORT

PROJECT INFORMATION

Project Name: UNUM Emergency Generator Pad

Address: Congress Street

Portland, Maine 04101

INSPECTOR INFORMATION

Inspector Name: _____

Firm: _____

Title: _____

Qualifications: _____

INSPECTION SUMMARY

Date of Inspection: _____

Major Observations: _____

_____

_____

_____

THE GENERATOR PAD IS IN COMPLIANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN WITH THE FOLLOWING EXCEPTIONS:

_____

_____

_____

_____

ACTIONS NECESSARY TO BRING THE PAD INTO COMPLIANCE:

_____

_____

REQUIRED MODIFICATIONS TO STORMWATER POLLUTION PREVENTION PLAN (MUST BE IMPLEMENTED WITHIN 7 DAYS OF INSPECTION):

_____

_____

_____

_____

CERTIFICATION STATEMENT:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the systems, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of find and imprisonment for knowing violations."

_____
Signature

_____
Typed Name

_____
Title

_____
Date